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CONSTRUCTION WORK IN PROGRESS POLICY ACT

HEARINGS

BEFORE THE

SUBCOMMITTEE ON ENERGY REGULATION

OF THE

COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

SECOND SESSION

ON

S. 817

A BILL TO AMEND SECTION 205 OF THE FEDERAL POWER ACT (16 U.S.C. 824D) RELATING TO INCLUSION OF CONSTRUCTION WORK IN PROGRESS IN THE WHOLESALE RATE BASE OF PUBLIC UTILITIES

S. 1069

A BILL TO AMEND THE FEDERAL POWER ACT TO LIMIT THE RECOVERY BY PUBLIC UTILITIES OF CERTAIN COSTS OF CONSTRUCTION WORK IN PROGRESS THROUGH RATE INCREASES

H.R. 555

AN ACT TO AMEND THE FEDERAL POWER ACT TO LIMIT THE RECOVERY BY PUBLIC UTILITIES OF CERTAIN COSTS OF CONSTRUCTION WORK IN PROGRESS THROUGH RATE INCREASES

APRIL 12, MAY 18, AND AUGUST 2, 1984

Printed for the use of the
Committee on Energy and Natural Resources

U.S. GOVERNMENT PRINTING OFFICE
39-532 O WASHINGTON : 1984

S311-15

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CONSTRUCTION WORK IN PROGRESS POLICY ACT

THURSDAY, APRIL 12, 1984

U.S. Senate,
Subcommittee on Energy Regulation,
Committee on Energy and Natural Resources,
Washington, DC.

The subcommittee met, pursuant to notice, at 9 a.m., in room SD-366, Dirksen Office Building, Hon. Frank H. Murkowski, presiding.

Present: Senators Murkowski, Chafee, and Melcher.

Also present: Howard Useem, professional staff member; Elizabeth Moler, counsel for the minority; and Benjamin S. Cooper, professional staff member for the minority.

OPENING STATEMENT OF HON. FRANK H. MURKOWSKI, A U.S. SENATOR FROM THE STATE OF ALASKA

Senator Murkowski. The Subcommittee on Energy Regulation of the full committee will come to order.

Today, the Subcommittee on Energy Regulation is holding the first of 2 days of hearings on three pending bills dealing with the arcane subject of FERC jurisdictional construction work in progress in rate base.

These hearings are being held at the request of my colleague, Senator Chafee, and other interested members of the committee who are concerned about the consequences of the Federal Energy Regulatory Commission's recent change in CWIP regulations.

Originally, the subcommittee planned on holding one day of hearings and hoping to accommodate all witnesses. However, due to the number of witnesses requesting to testify and the problems with interested Senators' schedules, instead of unduly limiting witnesses' opportunity to testify, the subcommittee will hold a second day. The second day will be scheduled as soon as possible. As yet, we do not know when that is going to occur.

The debate over CWIP in rate base centers around the issue of whether or not ratepayers should begin paying for a facility before it becomes used and useful.

The Federal Energy Regulatory Commission's CWIP regulations apply only to those sales of electricity and utilities which are subject to its jurisdiction.

About 12 percent of electricity sold nationwide is subject to FERC's jurisdiction, and about 195 investor-owned public utilities file rate schedules with FERC.

The remaining 88 percent of electricity sales are not subject to the Commission's jurisdiction, as is in the case with the nearly 3,000 non-investor-owned utilities.

To put this issue in perspective, to date there have been 15 CWIP filings made to FERC, with a total rate increase requested of $118 million, as compared to 1982 electricity sales totalling about $120 billion. This is less than one-tenth of 1 percent rate impact.

While these figures tend to understate the potential regional consequences of the FERC's CWIP regulations, they are indicative that the effects of the regulations may not be that significant.

In terms of public policy involved, the potential short-term cost savings to consumers of enactment of the pending legislation must be balanced against the long-term consequences of price, supply and system reliability.

I am not now convinced that enactment of the pending legislation would materially help customers, and I am concerned about its potential long-term negative consequences for consumers.

We have a lengthy witness list today, and I am sure that all the witnesses will explore in detail both the short- and long-term consequences of the pending legislation.

The chairman of the committee, Senator McClure, had planned to be here this morning. However, he has a conflict that has prevented him from attending. His statement will be entered into the record at this point.

[The prepared statements of Senator McClure, Senator Murkowski, and the texts of S. 817, S. 1069, and H.R. 555 follow:]

STATEMENT OF SENATOR JAMES A. McCLURE

SUBCOMMITTEE ON ENERGY REGULATION
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

LEGISLATIVE HEARING ON S. 817, S. 1069 AND H.R. 555
(CONSTRUCTION WORK IN PROGRESS)
APRIL 12, 1984

THE SUBJECT OF THIS HEARING IS A SET OF LEGISLATIVE PROPOSALS DESIGNED TO REDUCE TEMPORARILY THE RATES PAID BY THE WHOLESALE CUSTOMERS OF ELECTRIC UTILITY COMPANIES. EACH OF THE BILLS WOULD SEVERELY LIMIT THE INCLUSION OF CONSTRUCTION WORK IN PROGRESS (CWIP) IN THE RATE BASE OF ELECTRIC UTILITIES. FOR EACH COMPANY, THIS WOULD MEAN THAT THE CONSTRUCTION COSTS OF ANY NEW BASELOAD ELECTRIC GENERATING PLANT WOULD BE EXCLUDED FROM THE RATE BASE DURING THE CONSTRUCTION PERIOD. THE REDUCED RATE BASE WOULD PRODUCE A LOWER TOTAL RETURN, WHICH WOULD PERMIT THE UTILITY TO CHARGE ITS CUSTOMERS LOWER RATES UNTIL THE PLANT BECAME OPERATIONAL.

I AM NOT CONVINCED THAT THE PROPOSED LEGISLATION IS NECESSARY OR DESIRABLE. ALTHOUGH THE BILLS HAVE BEEN DESCRIBED BY THEIR SPONSORS AS BENEFITING CONSUMERS, I HAVE SERIOUS CONCERNS ABOUT THE LONG-TERM EFFECTS OF THE LEGISLATION ON CUSTOMER RATES, AND ON THE ABILITY OF THE UTILITY COMPANIES TO FINANCE THE NEW CONSTRUCTION THAT EVENTUALLY WILL BE NECESSARY.

IT APPEARS TO ME THAT THE CWIP ISSUE OFFERS RATEPAYERS THE CHOICE OF PAYING HIGHER RATES TODAY, OR PAYING MUCH HIGHER RATES TOMORROW. THE PENDING BILLS WOULD COMPEL A REDUCTION OF THE RATES THAT WOULD OTHERWISE BE PAID TODAY. HOWEVER, THE RATE RELIEF WOULD BE ONLY TEMPORARY. OVER THE LONGER TERM, THE CUMULATIVE TOTAL OF RATEPAYER PAYMENTS WOULD BE MUCH HIGHER. IF CWIP WERE EXCLUDED FROM THE RATE BASE, AS THE BILLS WOULD REQUIRE, THEN THE RATE BASE OF EACH UTILITY WOULD BE INCREASED IN TWO RESPECTS, AT THE TIME ANY NEW PLANT BECAME OPERATIONAL. FIRST, CONSTRUCTION COSTS WOULD BE ADDED. SECOND, THE ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION (AFUDC) WOULD BE ADDED. AFUDC CONSISTS OF THE TOTAL COST OF THE BORROWED CAPITAL USED TO

FINANCE PLANT CONSTRUCTION. FOR BASELOAD GENERATING PLANTS, THESE ACCUMULATED INTEREST AND DIVIDEND PAYMENTS AMOUNT TO MILLIONS OF DOLLARS. TO ILLUSTRATE, A $3 BILLION PLANT FINANCED WITH BORROWED CAPITAL WOULD HAVE AN ANNUAL CAPITAL COST OF $300 MILLION AT AN AVERAGE INTEREST RATE OF 10 PERCENT.

IF THE PROPOSED CWIP LEGISLATION WERE ENACTED, THE TOTAL AMOUNT OF AFUDC FOR ANY NEW PLANT WOULD BE ADDED TO THE RATE BASE OF THE UTILITY. IT WOULD SLOWLY DECLINE THROUGH STRAIGHT LINE DEPRECIATION OVER THE LIFE OF THE PLANT. IN THE MEANTIME, EACH YEAR, THE UTILITY WOULD RECEIVE A RETURN (WHICH AVERAGED ABOUT 10 PERCENT OVER THE PAST DECADE) ON THE UNDEPRECIATED PORTION OF THE AFUDC. THIS IS THE BASIS FOR MY VIEW THAT THE PROPOSED LEGISLATION ULTIMATELY WOULD COMPEL RATEPAYERS TO PAY HIGHER RATES.

ANOTHER ISSUE OF CONSIDERABLE CONCERN IS WHETHER THE PROPOSED LEGISLATION WOULD SIGNIFICANTLY INCREASE THE CAPITAL COSTS OF THOSE UTILITIES WITH LARGE CONSTRUCTION PROGRAMS. THE LEGISLATION WOULD REQUIRE REDUCTIONS IN UTILITY OPERATING REVENUES. FOR MANY UTILITIES, THE REDUCED REVENUE WOULD INCREASE TWO RISKS: POSSIBLE DEFAULT ON BOND INTEREST PAYMENTS, OR REDUCTIONS IN DIVIDEND PAYMENTS. BOND RATINGS WOULD BE LOWERED, AND THE UTILITIES WOULD THEN BE COMPELLED TO PAY HIGHER INTEREST RATES AND HIGHER YIELDS ON COMMON EQUITY. UNDER OUR SYSTEM OF PUBLIC UTILITY REGULATION, INCREASES IN CAPITAL COSTS ULTIMATELY ARE PAID BY THE UTILITY RATEPAYERS THROUGH HIGHER RATES.

THOSE WHO SUPPORT THE PROPOSED CWIP LEGISLATION MAKE THE BASIC ARGUMENT THAT IT IS NOT FAIR TO COMPEL RATEPAYERS TO PAY A RETURN ON THE CONSTRUCTION COSTS OF ELECTRIC GENERATING PLANTS BEFORE CONSTRUCTION IS COMPLETED. THEY CONTEND THAT CONSUMERS RECEIVE NO BENEFIT FROM A PLANT UNDER CONSTRUCTION, BECAUSE NO ELECTRICITY IS PRODUCED. THIS ARGUMENT LIMITS THE CONCEPT OF A BENEFIT TO THE ACTUAL RECEIPT OF ELECTRIC ENERGY. I AM NOT PERSUADED THAT THE CONCEPT OF CONSUMER BENEFIT SHOULD BE SO RESTRICTED. IN MY VIEW, RATEPAYERS RECEIVE A SUBSTANTIAL BENEFIT

FROM FACILITIES UNDER CONSTRUCTION. THE BENEFIT IS A REASONABLE ASSURANCE THAT ELECTRIC SERVICE WILL CONTINUE TO BE RELIABLE. LIKEWISE, I DOUBT THAT ANYONE WOULD DISPUTE THE IDEA THAT TAXPAYERS TODAY RECEIVE A PRESENT BENEFIT FROM THE FEDERAL GOVERNMENT'S PURCHASE OF CRUDE OIL FOR THE STRATEGIC PETROLEUM RESERVE, ALTHOUGH THE OIL WOULD BE DISTRIBUTED AND CONSUMED ONLY IN THE EVENT OF A SEVERE OIL SUPPLY DISRUPTION.

ELEVEN MONTHS AGO, THE FEDERAL ENERGY REGULATORY COMMISSION (FERC) INSTITUTED A NEW POLICY ON INCLUSION OF CWIP IN THE RATE BASE. THE NEW POLICY WAS THE PRODUCT OF A RULEMAKING PROCEEDING CONDUCTED OVER A PERIOD OF ALMOST TWO YEARS. THE RECORD OF THE PROCEEDING IS MASSIVE. AFTER REVIEWING COMMENTS FROM NUMEROUS ELECTRIC UTILITY COMPANIES, WHOLESALE CUSTOMERS OF ELECTRIC UTILITIES, CONSUMER REPRESENTATIVES, AND GOVERNMENT AGENCIES, THE COMMISSION CONCLUDED THAT THE PUBLIC INTEREST IS BEST SERVED BY A POLICY PERMITTING ELECTRIC UTILITIES TO INCLUDE IN THEIR RATE BASE UP TO 50 PERCENT OF CWIP, SUBJECT TO A LIMITATION ON RATE IMPACT.

THE HEARING TODAY IS ON LEGISLATIVE PROPOSALS THAT WOULD OVERTURN THE FERC POLICY ON CWIP. HOWEVER, IT IS IMPORTANT TO RECALL THAT OVER A PERIOD OF 64 YEARS, THE CONGRESS HAS DELEGATED BROAD REGULATORY AUTHORITY TO THE FERC AND ITS PREDECESSOR AGENCY. IT IS EVIDENT THAT THE FERC HAS CAREFULLY CONSIDERED THE ISSUE. I WOULD THEREFORE URGE THE MEMBERS OF THIS COMMITTEE TO REVIEW IN DETAIL THE FACTUAL FINDINGS OF THE COMMISSION, AND THE REASONING SUPPORTING ITS DECISION. IN MY JUDGMENT, ANY SERIOUS CONSIDERATION OF THE PROPOSED LEGISLATION SHOULD BE PREMISED ON A DEMONSTRATION THAT THE COMMISSION'S FINDINGS ARE INACCURATE, OR ITS REASONING IS INADEQUATE. THE HEARING TODAY SHOULD GIVE US SOME INDICATION OF WHETHER SUCH A DEMONSTRATION CAN BE MADE.

STATEMENT
OF
SENATOR FRANK H. MURKOWSKI
CHAIRMAN
SUBCOMMITTEE ON ENERGY REGULATION

12 APRIL 1984 HEARING
ON
S. 817, S. 1069 AND H.R. 555

TODAY THE SUBCOMMITTEE ON ENERGY REGULATION IS HOLDING THE FIRST OF TWO DAYS OF HEARINGS ON THREE PENDING BILLS DEALING WITH THE ARCANE SUBJECT OF FERC JURISDICTIONAL CONSTRUCTION WORK IN PROGRESS IN RATE BASE.

THESE HEARINGS ARE BEING HELD AT THE REQUEST OF SENATOR CHAFEE AND OTHER INTERESTED MEMBERS OF THE COMMITTEE WHO ARE CONCERNED ABOUT THE CONSEQUENCES OF THE FEDERAL ENERGY REGULATORY COMMISSION'S RECENT CHANGE IN CWIP REGULATIONS.

ORIGINALLY THE SUBCOMMITTEE PLANNED ON HOLDING ONLY ONE DAY OF HEARINGS AND ACCOMMODATING ALL WITNESSES ON THAT DAY. HOWEVER, DUE TO THE NUMBER OF WITNESSES REQUESTING TO TESTIFY AND PROBLEMS WITH INTERESTED SENATOR'S SCHEDULES, INSTEAD OF UNDULY LIMITING WITNESSES' OPPORTUNITY TO TESTIFY THE SUBCOMMITTEE WILL HOLD A SECOND DAY. THE SECOND DAY WILL BE SCHEDULED AS SOON AS POSSIBLE.

THE DEBATE OVER CWIP IN RATE BASE CENTERS AROUND THE ISSUE OF WHETHER OR NOT RATEPAYERS SHOULD BEGIN PAYING FOR A FACILITY BEFORE IT BECOMES "USED AND USEFUL."

THE FEDERAL ENERGY REGULATORY COMMISSION'S CWIP REGULATIONS APPLY ONLY TO THOSE SALES OF ELECTRICITY AND UTILITIES WHICH ARE SUBJECT TO ITS JURISDICTION. ABOUT 12% OF ELECTRICITY SOLD NATIONWIDE IS SUBJECT TO FERC'S JURISDICTION, AND ABOUT 195 INVESTOR-OWNED PUBLIC UTILITIES FILE RATE SCHEDULES WITH FERC. THE REMAINING 88% OF ELECTRICITY SALES ARE NOT SUBJECT TO THE COMMISSION'S JURISDICTION, AS IS THE CASE WITH THE NEARLY 3,000 NON-INVESTOR OWNED UTILITIES.

TO PUT THE ISSUE IN PERSPECTIVE, TO DATE THERE HAVE BEEN 15 CWIP FILINGS MADE TO FERC WITH A TOTAL RATE INCREASE REQUESTED OF $118 MILLION AS COMPARED TO 1982 ELECTRICITY SALES TOTALLING ABOUT $120 BILLION. THAT IS LESS THAN A 1/10 OF ONE PERCENT RATE IMPACT.

WHILE THESE FIGURES TEND TO UNDERSTATE THE POTENTIAL REGIONAL CONSEQUENCES OF THE FERC CWIP REGULATIONS, THEY ARE INDICATIVE THAT THE EFFECTS OF FERC'S CWIP REGULATIONS MAY NOT BE THAT SIGNIFICANT.

IN TERMS OF THE PUBLIC POLICY INVOLVED, THE POTENTIAL SHORT-TERM COST SAVINGS TO CONSUMERS OF ENACTMENT OF THE PENDING LEGISLATION MUST BE BALANCED AGAINST THE LONG-TERM CONSEQUENCES ON PRICE, SUPPLY AND SYSTEM RELIABILITY.

I AM NOT NOW CONVINCED THAT ENACTMENT OF THE PENDING LEGISLATION WOULD MATERIALLY HELP CUSTOMERS, AND I AM CONCERNED

ABOUT ITS POTENTIAL LONG TERM NEGATIVE CONSEQUENCES FOR CONSUMERS.

WE HAVE A LENGTHY WITNESS LIST TODAY AND I AM SURE THAT ALL OF THE WITNESSES WILL EXPLORE IN DETAIL BOTH THE SHORT AND LONG-TERM CONSEQUENCES OF THE PENDING LEGISLATON.

OUR FIRST WITNESS TODAY IS SENATOR CLAIBORNE PELL, THE SENIOR SENATOR FROM RHODE ISLAND.

II

98TH CONGRESS
1ST SESSION

S. 817

To amend section 205 of the Federal Power Act (16 U.S.C. 824D) relating to inclusion of construction work in progress in the wholesale rate base of public utilities.

IN THE SENATE OF THE UNITED STATES

MARCH 16 (legislative day, MARCH 14), 1983

Mr. METZENBAUM introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

---

A BILL

To amend section 205 of the Federal Power Act (16 U.S.C. 824D) relating to inclusion of construction work in progress in the wholesale rate base of public utilities.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 205 of the Federal Power Act (16 U.S.C. 824D) is amended by adding at the end thereof the following new subsection:

"(g)(1) Any rate or charge made, demanded, or received by any public utility for or in connection with the transmission or sale of electric energy subject to the jurisdiction of the Commission, which is predicated in whole or in part upon the

★(Star Print)

costs associated with construction work in progress, shall be presumed not to be just and reasonable, except as provided below.

"(2) As used in this subsection, the term "construction work in progress" means utility plants and portions of utility plants under construction, but not yet in service, to be used in the generation or transmission of electric energy.

"(3) Upon application by a public utility, and examination by the Commission as to the propriety of the costs to be incurred, the Commission shall approve inclusion of costs associated with construction work in progress in wholesale rate base for—

"(A) construction of pollution control facilities; or

"(B) conversion of oil or gas-fired facilities.".

SEC. 2. The Federal Energy Regulatory Commission, within the one hundred and eighty-day period following the date of the enactment of this Act, shall prescribe such regulations as are necessary to implement the provisions of the amendment made by the first section of this Act.

SEC. 3. The amendment made by the first section of this Act shall supersede any administrative action, including issuance of regulations relating to inclusion of construction work in progress in wholesale rate base, of the Federal Energy Regulatory Commission prior to the date of enactment of this Act.

II

98TH CONGRESS
1ST SESSION

S. 1069

To amend the Federal Power Act to limit the recovery by public utilities of certain costs of construction work in progress through rate increases.

IN THE SENATE OF THE UNITED STATES

APRIL 15 (legislative day, APRIL 12), 1983

Mr. CHAFEE (for himself, Mr. STAFFORD, Mr. PELL, Mr. BIDEN, Mr. HUMPHREY, and Mr. DANFORTH) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

---

A BILL

To amend the Federal Power Act to limit the recovery by public utilities of certain costs of construction work in progress through rate increases.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. This Act may be cited as the "Construction Work in Progress Policy Act of 1983".

FINDINGS

SEC. 2. The Congress finds that—

(1) it is in the public interest that the electric utility industry be in good financial health;

(2) it is also in the public interest that electric energy-related energy services be delivered at the least possible cost and with adequate reliability;

(3) while there is evidence that the inclusion of the costs of construction work in progress in Federal Energy Regulatory Commission jurisdictional electric rate bases can improve the financial health of electric utilities in the short run, there is also evidence that inclusion of such costs in such rate bases can worsen electric utility financial health over the long run;

(4) while inclusion of the costs of construction work in progress in electric rate bases may lower the rates for electric energy over the long run, such inclusion will raise rates for electric energy in the short run;

(5) construction work in progress transfers the risk that a facility under construction will be canceled (because of reasons unrelated to the financial health of the utility) from shareholder to ratepayer; and

(6) since there may be instances in which it is appropriate to include the costs of construction work in progress in the rate bases of public utilities regulated by the Federal Energy Regulatory Commission, the Commission should have limited discretion to approve

such inclusion pursuant to policies and procedures established by law.

PURPOSE

SEC. 3. It is the purpose of this Act to establish policies and procedures governing the inclusion of costs of construction work in progress in the rate bases of electric utilities regulated under the Federal Power Act.

AMENDMENT OF FEDERAL POWER ACT

SEC. 4. The Federal Power Act is amended by adding the following new section at the end of title II:

"COSTS OF CONSTRUCTION WORK IN PROGRESS

"SEC. 213. (a) Upon application of a public utility, the Commission may—

"(1) consistent with the provisions of sections 205 and 206 of this Act, approve the inclusion of the following costs of construction work in progress in the rate base of such public utility:

"(i) the costs of any pollution-control facility; and

"(ii) the costs of conversion of oil or natural gas-fired facilities to the use of fuels other than oil or natural gas; and

"(2) subject to the provisions of subsections (b) through (d) of this section, approve by final order the costs of construction work in progress for facilities other than those referred to in paragraph (1) of this subsection.

"(b)(1) Upon application by a public utility for approval of any increase in the rates charged for electric energy where such increase is based on the inclusion in such utility's rate base of the costs of construction work in progress incurred for facilities other than those referred to in paragraph (1) of subsection (a), the Commission shall commence an evidentiary hearing. In any such hearing, the burden of proof to show that any increased rate for which application is made under this subsection is consistent with the requirements of this subsection and subsection (d) shall be upon the applicant public utility. The Commission shall give to the hearing and decision of such questions the same preference as is given to questions arising in proceedings brought under subsections (a) through (e) of section 205, and the Commission shall decide such questions as speedily as possible.

"(2) Any application submitted to the Commission under this subsection for the inclusion in the rate base of any costs of construction work in progress for any facility shall contain—

"(A) a certification, with explanation, that the public utility submitting the application will be in severe financial difficulty unless such costs are included in the rate base;

"(B) a statement explaining in detail the benefits and costs to customers of including such costs in the rate base, together with an analysis of the likely short-run and longrun rate effects associated with such inclusion;

"(C) a statement explaining the need for such facility, including a detailed assessment of the potential of alternative means of meeting demand for electric energy-related energy services at less system cost, including—

"(i) customer consumption-efficiency improvements and use of renewable resources,

"(ii) load management techniques,

"(iii) cogeneration,

"(iv) electricity generation using biomass, waste, renewable resources, or geothermal resources,

"(v) changes in rate design,

"(vi) production-efficiency improvements (including improved powerplant productivity and interutility coordination), and

"(vii) any other alternatives established by the Commission by rule;

"(D) a statement explaining why inclusion of the costs of construction work in progress in rate base, as opposed to other means of alleviating or preventing the severe financial difficulty (including innovative financing and other regulatory actions which the Commission could take consistent with existing law and regulations) is necessary to alleviate or prevent the severe financial difficulty; and

"(E) such other information reasonably related to the Commission's duties under subsections (c) through (d) as the Commission shall by rule require.

"(3) If, after evidentiary hearing, the Commission finds that—

"(A) unless all or a portion of the costs of construction work in progress for any facility is included in the rate base of applicant public utility, the utility will be in severe financial difficulty;

"(B) inclusion of the costs of construction work in progress, or any portion thereof, is necessary to alleviate or prevent such severe financial difficulty;

"(C) the applicant has initiated programs to acquire the resources identified in the statement prepared in accordance with paragraph (2)(c) of this subsection;

"(D) the facility, the costs of which are proposed to be included in the rate base, is reasonably necessary to meet the demand of its customers for electric energy-related energy services at least system cost;

"(E) if the record of the evidentiary hearing includes a serious allegation that the severe financial difficulty of the applicant public utility is at least partially attributable to mismanagement, that such mismanagement will not likely hinder the alleviation or prevention of the severe financial difficulty in the future;

"(F) in the case of customers of the public utility who are purchasing electric energy for resale, the long-term benefits of the inclusion of such costs in the rate base are sufficiently important to necessitate shortrun rate increases, if any, caused by such inclusion;

"(G) innovative financing is insufficient to alleviate or prevent severe financial difficulty; and

"(H) the applicant public utility will discontinue the capitalization of allowance for funds used during construction for these costs of construction work in progress which are included in the rate base,

the Commission shall approve the rate increase applied for or, if applicable, order a lesser rate increase in accordance with subsection (d) of this section. No affirmative finding shall be made by the Commission under subparagraph (B) unless such finding is supported by clear and convincing evidence on the record.

"(d) No electric energy rate increase approved or ordered by the Commission under this section may—

"(1) be charged for electric energy sold prior to the date of such approval or order;

"(2) exceed an amount necessary to alleviate or prevent the severe financial difficulty of the applicant public utility;

"(3) be so substantial as to have an anticompetitive effect, including the establishment or maintenance of unreasonable price discrimination between wholesale and retail electric energy rates;

"(4) be charged to recover any costs imprudently incurred;

"(5) be otherwise unduly discriminatory or preferential or exceed an amount that is just and reasonable.

"(e) Not later than one hundred and eighty days after the date of enactment of this section, the Commission shall promulgate a rule governing the implementation of the authorities granted in this section.

"(f) As used in this section, the term—

"(1) 'construction work in progress' means construction of a facility used to generate or transmit electric energy which construction is undertaken, or proposed to be undertaken, but which is not yet in service;

"(2) 'severe financial difficulty' means the inability of a public utility to satisfy the minimum indenture requirements governing the issuance of additional debt securities by such public utility;

"(3) 'allowance for funds used during construction' means interest charged to construction work in progress; and

"(4) 'system cost' means an estimate of all the direct costs of a resource over its effective life, including, if applicable, the cost of distribution and transmission to the customer and, among other factors, waste disposal costs, end-of-cycle costs, and fuel costs (including projected increases and decreases), and such quantifiable environmental costs as are directly attributable to such resource.".

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98TH CONGRESS
2D SESSION

H. R. 555

IN THE SENATE OF THE UNITED STATES

FEBRUARY 9 (legislative day, FEBRUARY 6), 1984

Received; read twice and referred to the Committee on Energy and Natural Resources

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AN ACT

To amend the Federal Power Act to limit the recovery by public utilities of certain costs of construction work in progress through rate increases.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Construction Work in Progress Policy Act of 1983".

FINDINGS

SEC. 2. The Congress finds that—

(1) it is in the public interest that electric utilities have a cash flow adequate to support investments in resources that are in the interest of their ratepayers;

(2) it is in the public interest that electric energy services be delivered at least possible cost, and with adequate reliability, and that unnecessary rate increases be avoided;

(3) inclusion of the costs of construction work in progress in public utility rate bases established by the Federal Energy Regulatory Commission causes rate increases;

(4) inclusion of the costs of construction work in progress in public utility rate bases established by the Federal Energy Regulatory Commission may, in some cases, cause anticompetitive price discrimination and may, in some cases, cause some utility customers to pay for utility facilities that they will not use;

(5) inclusion of the costs of construction work in progress in public utility rate bases established by the Federal Energy Regulatory Commission violates the principle that today's ratepayers should pay through rates only for the costs of facilities in service to them; it also transfers a portion of the risk of financing the construction of additional facilities from shareholders to ratepayers; and

(6) the adequacy of cash flow of some electric utilities in poor financial health may be improved in a manner that is consistent with the interests of their

ratepayers by the inclusion of some of the costs of construction work in progress in public utility rate bases established by the Federal Energy Regulatory Commission and, thus, the Commission should have discretion to approve such inclusion, on a case-by-case basis, pursuant to policies and procedures established by law.

PURPOSE

SEC. 3. It is the purpose of this Act to establish policies and procedures governing the inclusion of costs of construction work in progress in the rate bases of public utilities regulated under the Federal Power Act.

AMENDMENT OF FEDERAL POWER ACT

SEC. 4. The Federal Power Act is amended by adding the following new section at the end of part II:

"COSTS OF CONSTRUCTION WORK IN PROGRESS

"SEC. 213. (a) Nothing in this section shall be construed to affect the authority of the Commission to approve the inclusion of the following costs of construction work in progress in the rate base of a public utility in accordance with the provisions of sections 205 and 206 of this Act—

"(1) the costs of any pollution control facility; and

"(2) the costs of conversion of oil or natural gas-fired facilities to the use of fuels other than oil or natural gas.

For purposes of the following provisions of this section, the term 'costs of construction work in progress' shall be treated as not including the costs referred to in paragraphs (1) and (2).

"(b) Upon application of a public utility, the Commission shall, consistent with the provisions of subsections (c) through (k) of this section, approve inclusion of the costs of construction work in progress in the rate base of such public utility.

"(c) Any public utility whose internal generation of funds from rates established by the Commission and from all other sources of funds related to the Commission's jurisdiction in a test period established by the Commission is, after subtraction of interest payments and dividends (except reinvested dividends) subject to the Commission's jurisdiction, 40 per centum or less of planned construction expenditures subject to the Commission's jurisdiction in such test period may file an application for the inclusion of the costs of construction work in progress in the rate base of such public utility.

"(d) Any application submitted to the Commission under subsection (c) shall contain—

"(1) a detailed description of the financial condition of the public utility filing the application and, if the public utility is in 'severe financial difficulty', as defined by the Commission by rule, a certification of such condition;

"(2) a detailed description of construction expenditures subject to the Commission's jurisdiction in the test period and detailed description of funds to be internally generated during that period from rates prescribed by the Commission and all other sources of funds related to the Commission's jurisdiction;

"(3) a statement explaining the need for the facility proposed to be included in the rate base and describing the public utility's construction program, including a detailed assessment of the potential of alternative means of meeting demand for electric energy services at least system cost with adequate reliability, including—

"(i) customer consumption efficiency improvements and use of renewable resources,

"(ii) load management techniques,

"(iii) cogeneration,

"(iv) electricity generation using biomass, waste, renewable resources, or geothermal resources,

"(v) changes in rate design,

"(vi) production efficiency improvements (including improved powerplant productivity and inter-utility coordination), and "(vii) any other alternatives established by the Commission by rule; and

"(4) such other information reasonably related to the Commission's duties under this Act as the Commission shall by rule require.

"(e) Upon application by a public utility under subsection (c) of this section, the Commission shall commence an evidentiary hearing. In any such hearing, the burden of proof to show that any increased rate for which application is made under this subsection is consistent with the requirements of this section shall be upon the applicant. The Commission shall give to the hearing and decision of such questions the same preference as is given to questions arising in proceedings brought under subsections (a) through (e) of section 205, and the Commission shall decide such questions as speedily as possible.

"(f) If an application filed by a public utility pursuant to subsection (c) of this section contains a certification of 'severe financial difficulty' (as defined by the Commission by rule) and if the Commission finds that such public utility is in 'severe financial difficulty', the Commission, after preliminary adjudicatory hearing on the matter of the validity of the certification, shall permit, by order, the inclusion of the costs of such public utility's construction work in progress in the rate base and shall permit any rate increase attributable to such inclusion in the rate base, subject to the limitations set forth in paragraphs (1), (5), and (6) of subsection (h) of this section, to take effect immediately. The Commission shall require any public utility collecting any such rate increase to refund, with interest, to the persons on whose behalf such increases were paid, such portion of such increased rates as, by final order issued pursuant to subsection (g) of this section, shall not be found justified.

"(g) If, after evidentiary hearing, the Commission finds that—

"(1) the facility, the costs of which are proposed to be included in the rate base of a public utility submitting an application pursuant to subsection (c) of this section, is reasonably necessary to meet the demand of its customers for electric energy services at least system cost with adequate reliability, after accounting for all measures determined to be of less system cost, and

"(2) the financial condition of the public utility would, in the test period, likely be such as to prevent the financing of such facility by borrowing except at a cost significantly higher than the average cost of new long-term debt within the electric utility industry during that period, after taking account of the possibility of innovative financing methods, the Commission shall permit, by order, the inclusion of such costs of construction work in progress in rate base subject to the limitations contained in subsection (h) of this section.

"(h) The amount of costs of construction work in progress permitted to be included in a public utility's rate base by Commission order issued pursuant to subsection (g) of this section shall be limited by the following conditions—

"(1) no such costs in excess of those necessary to restore the internal generation of funds from rates established by the Commission and from all other sources of funds related to the Commission's jurisdiction during the test period established by the Commission, to a level of 40 per centum of construction expenditures subject to the Commission's jurisdiction, after subtraction of interest payments and dividends (except reinvested dividends) subject to the Commission's jurisdiction, during such test period shall be permitted to be included in such public utility's rate base;

"(2) no such costs that the Commission finds to have been imprudently incurred, including costs incurred because of mismanagement of the public utility, shall be permitted in such public utility's rate base;

"(3) no rate increase attributable to the inclusion of such costs in such public utility's rate base shall be so substantial as to have an anticompetitive effect, including the establishment of unreasonable price discrimination between wholesale and retail customers of such public utility and no such rate increase shall be otherwise unduly discriminatory or preferential;

"(4) upon certification by a customer of such public utility that a facility, or portion thereof, the costs of which are proposed to be included in rate base by such public utility will not be used to serve such customer or will provide service to such customer for only a fraction of such facility's useful life, the Commission shall limit the increase of rates to such customer attributable to the inclusion of such facility in such public utility's rate base to an amount that is just and reasonable in light of the facts of the situation;

"(5) in the first two years beginning on the date of promulgation of rules pursuant to subsection (j) of this section, no rate increase attributable to the inclusion of the costs of construction work in progress shall exceed 6 per centum per annum of the rates in effect on the date of promulgation of such rules; and

"(6) no electric energy rate increase attributable to the inclusion of such costs in the rate base may be charged for electric energy sold prior to the date of a Commission order approving such increase.

"(i) Public utilities shall discontinue the capitalization of allowance for funds used during construction for those costs of construction work in progress which are included in the rate base pursuant to this section.

"(j) Not later than one hundred and eighty days from the date of enactment of this section, the Commission shall promulgate rules governing the implementation of authorities granted in this section.

"(k) The Commission shall require that an amount of revenues equal to the amount of revenues derived from construction work in progress in the rate base of a public utility shall be deferred from inclusion in the rates of that utility when the facility becomes used and useful for public service, for a period of time which is no longer than the period over which construction work in progress has been included in jurisdictional rates, insofar as the Commission determines that such action is just and reasonable.

"(l) As used in this section, the term—

"(1) 'construction work in progress' means construction of a facility used to generate or transmit electric energy which construction is undertaken, or proposed to be undertaken, but which is not yet in service.

"(2) 'allowance for funds used during construction' means the cost of funds used for construction work in progress.

"(3) 'system cost' means an estimate of all the direct costs of a resource over its effective life, including the cost of generation transmission and distribution, if subject to the Commission's jurisdiction, and, among other factors, waste disposal costs, end-of-cycle costs, and fuel costs (including projected increases and decreases), and such quantifiable environmental costs as are directly attributable to such resource.".

Passed the House of Representatives February 8, 1984.

Attest: BENJAMIN J. GUTHRIE,

Clerk.

Senator MURKOWSKI. Our first witness today is our colleague, Senator Claiborne Pell, the senior Senator from the State of Rhode Island.

Senator Pell, we welcome you to the witness table and ask that you proceed.

STATEMENT OF HON. CLAIBORNE PELL, A U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator PELL. Thank you, Mr. Chairman.

And thank you for this opportunity to testify before this subcommittee on S. 1069, of which I'm the prime cosponsor.

As you know, this measure would restrict and more clearly define the provisions which would permit the recovery by electric utilities for certain costs of construction work in progress; more commonly referred to as CWIP, construction work in progress.

I commend you, Mr. Chairman, and the members of your committee, and particularly my own able colleague, the Senator from Rhode Island, Mr. Chafee, who introduced S. 1069 last April, for focusing attention on this issue which has a tremendous affect on electric utility ratepayers across New England, particularly in my own State of Rhode Island.

Today's hearing on the CWIP issue is very appropriate. Only last week our New England Governors met in Rhode Island to discuss the financial difficulties affecting the Seabrook nuclear power facility under construction in New Hampshire.

CWIP is very much a factor in the Seabrook problem. The uncertainty regarding the future of Seabrook places a huge strain not only on the public service company of New Hampshire, but on all utilities in New England.

And, whatever the outcome, it appears that the financial burden may end up falling on consumers and electric ratepayers, exactly where it should not fall.

This issue is well known to Rhode Island consumers, as they narrowly missed being charged for CWIP following a lengthy Federal Energy Regulatory Commission proceeding involving Montaup Electric Co. rate case.

In that proceeding, FERC denied CWIP to Montaup Electric Co. after hearing compelling evidence which demonstrated the severe adverse impact of allowing construction work in progress charge to electric ratepayers.

During this Montaup case, I'm very pleased that FERC, at my request, agreed to conduct a public hearing on this case in Central Falls, RI, which afforded consumers an important opportunity to express their views.

Mr. Chairman, in spite of the encouraging decision for Montaup ratepayers, CWIP remains a concern for utility ratepayers across New England, particularly in Rhode Island where 80 percent, four-fifths of our State's electricity costs are regulated by FERC.

For example, CWIP cases currently pending before the FERC filed by the New England Electric System and Eastern Utility Associates represents almost two-thirds of all such rate relief sought nationwide.

And these rate requests, if approved, would result in a passthrough to Rhode Island consumers $14.5 million annually in electric rate increases. Hence, these pending cases have special concern for the inhabitants, citizens of my State, since the FERC, in July 1983, issued a rule that says 50 percent, or half of the cost of construction can be placed in the rate base.

This deviation by FERC from their past rulings regarding CWIP is not, in my view, energy policy in the best interest of our nation.

This change of direction has great potential for abuse and unnecessary electric utility costs for consumers.

FERC, itself, says that automatic CWIP in the rate base will result in increased cost to the consumers and will encourage unneeded powerplants, shifts the risk from the shareholders under the free enterprise system to the consumers, who ought not be required to bear those risks.

I believe that S. 1069 ensures that consumers are not asked to pay for electrical generating facilities they may never need; in other words, they would not be charged in advance. It does not alter the policy that FERC had in effect before March 1983.

The legislation would permit CWIP to be collected for pollution control facilities and fuel conversion, or if the utility is in severe financial distress.

This legislation ensures that FERC exercise its regulatory authority properly by making a case-by-case determination of each utility's application.

It's my hope your subcommittee will favorably report S. 1069, or legislation similar to that recently passed by the House in February.

This measure reverses the FERC rule that automatically allows half of the CWIP in the rate base. Failure to address this issue will be costly for utility ratepayers not only in my State, but right across the Nation, and it will also divert resources for essential energy planning and conservation, and result in the improper direction of our national energy policy.

I do hope you will give favorable consideration to this legislation.

Thank you, Mr. Chairman.

Senator MURKOWSKI. Thank you very much, Senator Pell.

With four-fifths of your power being generated outside your State, I can certainly understand your concern.

I'm just curious. Is there any particular reason why there is not more power generated within your State?

Senator PELL. No particular reason, except that geographically, as opposed to your State, we are a very small area, rather densely populated, and the way the process of providing power has occurred, we have powerplants around us in the neighboring States, but we do not have much generating power in our own State.

Senator MURKOWSKI. Just one more question. The concern over the rate shock that comes when new facilities are built, could you address that as it relates to your particular point of view that the FERC's CWIP regulations are not in the best interest of the consumer?

How do you feel about the exposure of the sudden loading of all the front-end costs when something new comes on? .

Senator PELL. That's under the FERC rules it would occur.

Senator MURKOWSKI. That's correct.

Senator PELL. That would have, obviously, a pretty devastating impact on a lot of pretty low income citizens, because we are a State with relatively low per capita wage base.

This question of power is one of the questions where we are at a disadvantage with many other States in competition for new industry. Our industry is at a pretty declining base at this point.

Senator MURKOWSKI. With the FERC's treatment of CWIP, wouldn't that lessen that front-end shock by leveling out the cost of construction work in progress, instead of just throwing in the entire construction cost right up front?

Senator PELL. Well, we would have to pay for, for example, a facility that stopped in its tracks.

Senator MURKOWSKI. Oh, your concern is if it wasn't built?

Senator PELL. Yes. That would be a very profound shock. We see part of that already in Seabrook.

Senator MURKOWSKI. I understand.

Thank you very much, Senator. I wish you a good day.

Senator PELL. Thank you.

Senator MURKOWSKI. We have joining the subcommittee Senator Chafee from Rhode Island. I believe Senator Chafee has an opening statement. We welcome you this morning.

Senator CHAFEE. I want to thank Senator Pell for taking the time to be with us and so helpful on this. I know you have another appointment, so I have no questions.

Senator PELL. Thank you very much, indeed. We owe a great debt to your own work in this particular piece of legislation, which I hope is favorably considered.

Thank you.

Senator CHAFEE. Thank you.

Senator MURKOWSKI. Thank you.

Senator CHAFEE. I want to thank you, Mr. Chairman, for holding these hearings in the subcommittee. I know that you have a busy schedule, and to take time—and as I understand it, there are quite a few witnesses not only today, but——

Senator MURKOWSKI. The list is growing with each passing moment.

Senator CHAFEE. Well, it shows either that it's a popular or unpopular item.

Senator MURKOWSKI. Or else it's a good time to come to Washington, DC.

Senator CHAFEE. That may be it.

Mr. Chairman, I have a statement first of Representative Ottinger who, as perhaps you know, was the prime mover of this legislation in the House, and with your permission, I'd like that to go into the record.

Senator MURKOWSKI. It will be entered into the record.

[The prepared statement of Mr. Ottinger follows:]

Statement of
The Honorable Richard L. Ottinger
on H.R. 555 and S. 1069 and S. 817
before the
Subcommittee on Energy Regulation
of the
Committee on Energy and Natural Resources
United States Senate
April 12, 1984

I am pleased to submit to the Subcommittee on Energy Regulation of the Senate Energy and Natural Resources Committee this statement on legislation that would provide statutory guidance to the Federal Energy Regulatory Commission (FERC) in its handling of requests to include Construction Work in Progress (CWIP) in electric utility rate bases.

This hearing and the legislation which it addresses would not be necessary if the FERC had fulfilled its responsibility to the ratepayers of this country to regulate electric utilities fairly. FERC has not fulfilled this responsibility and, thus, Congress must act. I urge this Subcommittee, the full Committee and the Senate to expedite consideration of CWIP legislation.

Last year I joined with Congressman Harkin to develop the approach to CWIP policy embodied in H.R. 555 which passed the

House early this session by a vote of 288-113. H.R. 555 would establish a more restrictive policy than that embodied in the FERC rule, yet it meets the legitimate needs of the utilities. While I prefer the policy proposed in H.R. 555, other legislation before the Subcommittee, S. 1069, is far preferable to the present FERC rule, which will remain in effect absent Senate action.

In these remarks, I want to set forth the major reasons why I believe that Senate action is critical. For convenience, I have attached a passage from the report of the House Committee on Energy and Commerce on H.R. 555. This passage explains the issues raised by CWIP in some detail. While it is long, I urge that you read it because it elucidates in some detail why the Committee felt compelled to act to overturn the FERC rule.

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CWIP refers to the costs incurred by electric utilities to construct facilities, most often powerplants, not yet (if ever) in service to ratepayers. When these costs are included in rate base, ratepayers effectively pay the financing or carrying charges (interest and return on equity) on these costs during construction and before the facility is providing any electricity.

Reversing traditional policy which required that an electric utility show "severe financial difficulty" prior to including CWIP in rate base, the FERC, in March 1983, adopted a new rule allowing practically automatic inclusion of up to 50 percent of any utility's CWIP in rate base. Thus was established the policy of allowing a large portion of CWIP in rate base on an across-the-board basis without regard for the equities or need for this remedy in any individual case.

The FERC gave three justifications for its new policy. First, the FERC argued that CWIP in rate base is necessary to encourage capital investment by utilities. Second, the FERC argued that CWIP in rate base is a good price signal. Third, the FERC said that CWIP eases rate shock.

Having studied the CWIP issue in depth before the new FERC rule, Members of the Subcommittee on Energy Conservation and Power, which I chair, were alarmed at the new rule. On April 28, 1983, the Subcommittee held a hearing on the FERC rule and on H.R. 555 as originally introduced by Congressman Harkin. At the hearing it was established that CWIP in rate base--

-- causes significant rate hikes without any promise of lower rates in the future;
-- tends to cause utilities to invest in new facilities, as the FERC stated, but the need for these facilities (usually large new, capital-intensive powerplants) is questionable, at best, now and in the foreseeable future;
-- tends to encourage utilities to ignore investments in energy conservation, load management and other less

costly and less risky investments;

- -- removes utility management from the discipline of financial markets by transferring risk associated with new powerplants from shareholders to ratepayers;
- -- forces many ratepayers, particularly the elderly, to pay for powerplants they will never use;
- -- is not a good price signal;
- -- may ease rate shock but this, in itself, is no reason for across-the-board CWIP; and
- -- can be a valid regulatory remedy for an ailing electric utility trying to initiate or complete an economic resource.

In sum, our hearing showed that, while CWIP is not "evil" per se, it can be seriously abused and, thus, should be allowed only on a case-by-case basis when utilities show they really need it.

This conclusion led to a total rejection of the new FERC rule and the development of a compromise approach, an amended H.R. 555, as reported by the Committee and passed by the House. As passed by the House, H.R. 555 was drafted so that the CWIP remedy would be used by the FERC only on an extraordinary basis and under conditions in which CWIP in rate base had a good chance of being in the interest of ratepayers, at least over the long run. Thus, only utilities with a cash flow problem and with demonstrable difficulty in raising long-term debt could apply for CWIP. Furthermore, a utility would have to show that it had carefully assessed alternatives to the investment that it seeks to finance through CWIP in rate base, particularly conservation and load management techniques.

The new policy embodied in House-passed H.R. 555 focuses on cash flow because the utilities and its Wall Street advisors told the Committee that, whatever else CWIP in rate base accomplishes, it does improve cash flow and that cash flow is important to a financially healthy utility. To measure cash flow, the Committee chose a ratio in common use in the utility industry, that is, the ratio of internally generated funds to construction expenditures. Under H.R. 555, a utility would have to show that this ratio had fallen to 40 percent or below before it could apply to include CWIP in rate base. Why 40 percent? Because 40 percent separates utilities with a cash flow problem from those without such a problem. According to Standard and Poor's, an electric utility with 40 percent cash flow ratio is eligible for a "AA" rating, described as "debt (with a) strong capacity to pay interest and repay principal, differ (ing) from the highest rated issued only in small degree." In short, the choice of 40 percent reflects the Committee's concern that inclusion of CWIP in rate base should act as a kind of cash flow safety net for utilities, not as a guarantor of financial integrity, as the utilities had argued.

The Committee included the requirement that a utility seeking CWIP in rate base show that it had assessed alternatives to its CWIP investment in order to prevent the abuse of CWIP by utilities desiring to build big powerplants when alternatives may be cheaper. After all the powerplant cancellations this country has witnessed in the past ten years, we felt that this was the least we could do to protect ratepayers.

The requirement that a utility seeking CWIP show a high cost of long-term debt stems from our concern that CWIP should always be an extraordinary rememdy. Even a utility with a cash flow problem trying to build a facility that appears to be economic now should borrow rather than call on its ratepayers to finance its investment unless the cost of this debt is well above the industry average. Otherwise, ratepayers will be asked to shoulder financial risk that should remain with the shareholders.

Already, the utilities have filed for CWIP-related rate increases exceeding $100,000,000, increases that may be totally unnecessary, for all the FERC knows, because the agency imposes no requirement on utilities to show they have systematically assessed alternatives. Who knows how many more CWIP rate increase filings are waiting in the wings?

Additionally, Senators should be aware of the fact that it does not take very much effort for an electric utility to become regulated by the FERC with respect to its generation and transmission capacity. All that is required is that utilities form holding companies above themselves so that the first sale of electricity is a wholesale sale regulated by the FERC. If this happens, utilities will be able to circumvent state regulation which presently sharply limits the inclusion of CWIP in retail rate bases. However, electric utilities will have less incentive to reorganize to take advantage of FERC regulation, and to circumvent state regulation, if Congress reverses the irresponsible policy embodied in the FERC CWIP rule.

As I stated above, H.R. 555 as passed by the House is a compromise. While I support H.R. 555, I understand those who believe that the approach we took in this bill is too generous to the utilities. Certainly, it would be inappropriate to ease CWIP policy beyond the provisions of H.R. 555. Moreover, I would have no trouble supporting S. 1069 if such is the will of the Senate.

Finally, CWIP legislation is a rare opportunity for Members to vote in favor of responsible utility regulation in a manner that directly affects the welfare of your constituents. I strongly urge you to take advantage of this opportunity by acting favorably on either H.R. 555 or S. 1069.

Attachment

ISSUES

Inclusion of CWIP in rate base is one of the most debated issues of electric utility regulation.

Consumer organizations decry the immediate and sometimes substantial rate increase caused by the inclusion of CWIP in rate base. They also point out that inclusion of CWIP in rate base, combined with the current long lead times associated with investment in new powerplants, will result in many ratepayers, in particular the elderly, paying a substantial portion of the costs of a new facility from which they will receive little or no benefit. They also argue that inclusion of CWIP in rate base transfers some of the risk of a utility's investment program from shareholder to ratepayer and, in so doing, encourages unwise investments that otherwise would not and should not be made.

The mostly publicly owned utilities that purchase electricity at wholesale (and, thus, pay rates regulated by the Commission) point out that inclusion of CWIP in the rate bases of their power suppliers can have the effect of forcing such utilities to pay twice for the same increment of capacity. In addition, these utilities point out that inclusion of CWIP in Commission rate bases can subject them to anti-competitive price squeezes if CWIP is included in the Commission rate bases of their power suppliers but not, or to a lesser degree, in the state-regulated retail rate bases of their suppliers.

Investor-owned utilities and, in the preamble to its rule, the Commission, attempt to counter these contentions by arguing that inclusion of CWIP will encourage utilities to increase capital investment, because CWIP increases cash flow during construction, but that this investment is in the long-run interest of ratepayers. CWIP proponents argue that the admitted short-run rate increase occasioned by rate basing CWIP is, or can be, offset by rates that are lower than they otherwise would be under AFUDC regulation. They contend that the possibility that some elderly ratepayers may not live to see power generated by a new powerplant which they have financed by CWIP payments is not a flaw of such regulation. Finally, they argue that rate basing CWIP avoids rate shock when a facility built under AFUDC regulation finally goes into rate base and that inclusion of CWIP gives ratepayers better price signals.

Essentially, debate over CWIP boils down to contentions regarding the impact of a change from AFUDC regulation to CWIP regulation on:

(1) the level of electric rates;
(2) the fairness of electric rates;
(3) adequacy of reliable least cost supplies of electricity; and
(4) economic efficiency in energy services markets.

The Committee heard extensive testimony on these issues from utilities, the financial community, customers of utilities and public interest groups. On the basis of that testimony, the Committee believes that the problems caused by the inclusion of CWIP in rate base compel a conclusion that such inclusion should be allowed only on an extraordinary basis, in light of the need for CWIP by a utility and the impact of CWIP on its ratepayers.

IMPACT ON THE LEVEL OF RATES

There is general agreement that the inclusion of CWIP in rate base means an immediate rate increase: ratepayers start paying for a portion of the costs of a facility while it is under construction instead of waiting until the facility has been completed. The total, initial rate increase occasioned by the Commission rule issued on May 16, 1983 has not been assessed by the Commission. Inclusion of 50 percent of non-pollution control and non-fuel conversion

CWIP on the books of electric utilities in Commission rate bases has been estimated to range from $490 million to $750 million over the two- to three-year period following promulgation.

The rate increase for any particular utility attributable to including CWIP in rate base under the new Commission rule and the resultant rate hike seen by ultimate consumers vary as a function of the amount of wholesale CWIP on a power supplier's books compared with existing rate base as well as the degree to which a utility power purchaser relies on a particular supplier for its requirements. On the basis of CWIP on the books in 1982, the Commission estimates that some utilities will be able to raise their wholesale rates up to nearly 17 percent over the next three years. Others, at the other end of the range, will be permitted to raise such rates only less than 1 percent. However, the range of increases is sensitive to the amount of CWIP on the books, a variable that can change rapidly if new construction is undertaken or existing construction completed.

Proponents of CWIP in rate base argue that, while CWIP causes rate increases initially, rates can be lower than they otherwise would be under AFUDC regulation over the long run. There are three reasons given by CWIP proponents why rates might theoretically be lower under CWIP regulation over the long run: (1) because no AFUDC is collected during construction for a powerplant built under CWIP regulation, the total cost of such a plant, all else being equal, will be less than if the powerplant were built under AFUDC regulation; (2) CWIP regulation reduces the riskiness of investment in a utility, thereby raising its bond ratings and lowering the required return on equity and, thus, it exerts long-run downward pressure on rates; and (3) inclusion of CWIP in rate base will encourage utilities to make investments in resources that are efficient.

Opponents of CWIP regulation acknowledge that a CWIP-built powerplant usually costs less than one built under AFUDC but argue that this is a red-herring and that inclusion of CWIP in rate base is almost never in the interest of either present utility customers or customers taken as a whole over time.

First, as long as utilities continue to build facilities, rates will likely remain higher under CWIP regulation than under AFUDC regulation, all else being equal. Inclusion of CWIP in rate base transfers the responsibility of ratepayers for utility costs forward in time thereby increasing rates now and any time a utility commences construction of a new facility. While this transfer may eventually enable the utility to avoid a portion of the costs of a facility, the downward pressure on rates exerted by this cost avoidance will likely be wiped out by rate increases caused by inclusion of CWIP as long as construction continues. The result is that, not only will rates be higher under CWIP regulation for the foreseeable future, but the present value of utility revenue requirements will also be higher under CWIP than under AFUDC regulation. The Commission analyzed the impact of its new CWIP rule on nominal rate increases and present value and concluded:

> For the industry as a whole, the Commission believes that, under plausible assumptions of future demand

> growth and inflation, CWIP-based rates may remain somewhat higher than AFUDC-based rates for the foreseeable future. This conclusion is based on a comparison of rates made in terms of absolute dollars. Assuming CWIP-based rates are slightly higher for the foreseeable future, as the Commission concedes is possible, no present value analysis will show that CWIP-based rates are less costly to customers than AFUDC-based rates, regardless of the consumer discount rate utilized. Page 106, Order 298, May 16, 1983.

Second, even assuming that the present value of utility revenue requirements were less under CWIP regulation than under AFUDC regulation and that ratepayers had some prospect in the future of rates lower under CWIP regulation than under AFUDC regulation, opponents of CWIP point out that this still is not necessarily in the interest of ratepayers. If ratepayers can invest or use money otherwise transferred to the utility under CWIP rates at an actual or implied rate of return higher than the utility's cost of capital, ratepayers are better off under AFUDC than under CWIP regulation. That is because it is carrying charges on CWIP, capitalized at the utility's cost of capital, that may make a powerplant built under AFUDC regulation more expensive than one built under CWIP regulation. Thus, for example, if ratepayers can beat a utility's cost of capital in investments that they make, they can earn more money during construction by not paying CWIP rates than the difference between the cost of a CWIP-built powerplant and the same powerplant built under AFUDC regulation. Moreover, many moderate and low-income consumers do not have discretionary investable income for stocks or bonds. For these customers inclusion of CWIP in rate base may well require deferral of what some would view as essential consumption of electricity or some other commodity.

On the basis of the above, it is understandable that many consumers are not convinced that inclusion of CWIP in rate base is in their interest either at present or over the long run even though a powerplant built under CWIP regulation may cost less in nominal dollars than one built under AFUDC regulation.

Utilities also argue that inclusion of CWIP in rate base will lower rates over the long run because it will reduce risk and, thus, exercise downward pressure on utility cost of capital. In the preamble to its rule, the Commission states that it could not quantify the effect of the inclusion of CWIP in rate base on the cost of capital but that its new CWIP rule "will generally exert a downward pressure on those costs." Page 87, Order 298.

Many ratepayers point out that if CWIP regulation reduces the riskiness of investment in an electric utility it is because a portion of such risk is transferred to ratepayers. Thus, if the adverse consequences that are implied in the taking of a risk actually occur, the potential of lower rates through lower costs of utility capital will not be fulfilled.

Risks that are in part transferred from investor to ratepayer when CWIP is included in rate base include: the risk that a powerplant on which construction has begun will be abandoned before completion; the risk that such powerplant, once in service, will turn out to be uneconomical; and the risk that inclusion of CWIP in rate base, by partially removing utility managers from the discipline of financial markets, will encourage poor resource choices among utility managements.

According to the Library of Congress, since 1975 about 112,000 megawatts of planned conventional steam turbine and nuclear generating capacity have been cancelled. Construction had begun on a portion of this capacity before it was abandoned. According to the U.S. Department of Energy's Energy Information Administration, about $10 billion was expended on cancelled nuclear powerplants between 1972 and 1982. Thus, the risk of abandonment is not insignificant.

The degree to which inclusion of CWIP in rate base transfers the risk of abandonment to ratepayers depends, in part, on the responsibility for the costs of construction and accumulated carrying charges on such costs of an abandoned powerplant as well as whether a utility is allowed a return on such costs after abandonment. Under present Commission policy on electric utility is permitted to charge ratepayers for the prudently incurred costs, including accumulated AFUDC, of an abandoned powerplant. Ratepayers pay for such costs pursuant to an amortization schedule. However, during amortization, a utility is not permitted to earn a return on the unamortized balance of costs.

This regulatory policy has, itself, already transferred a substantial portion of the financial risk of abandonment from investors to ratepayers. Inclusion of CWIP in rate bases would transfer another portion of what is left of such investor risk to ratepayers. That is because the amount of capital on which no return is permitted during amortization is less under CWIP regulation than under AFUDC regulation because ratepayers have made cash contributions during construction. The Commission acknowledges this risk transfer in the preamble to its new CWIP rule. *See* footnote 20, Order 298.

A second risk transferred in part from investor to ratepayer under CWIP regulation is the risk that a facility in which a utility has invested will turn out to be uneconomic. Up-front cash payments during construction of such a resource reduces the amount of capital at risk after the resource is placed in service to ratepayers. In light of the substantial cost overruns on recently constructed powerplants it is clear this risk is more than merely academic.

Another risk not so much transferred, but created, by CWIP regulation is that the infusion of interest-free cash from ratepayers made available by inclusion of CWIP in rate base will permit poor utility management and encourage otherwise uneconomic investment. Essentially, this argument is that CWIP regulation partially removes utility managements from the discipline of capital markets, markets that are presently telling utilities to go slow in making plans for major, new capital-intensive investments. Opponents of CWIP argue that removal from market discipline at this point in time is particularly inappropriate because the industry just now seems to be being weaned from unnecessary, long leadtime investments in new powerplants. They argue that it was just such investments that got them in financial trouble over the last ten years and that these investments will again be encouraged by CWIP regulation.

On the other hand, proponents of CWIP in rate base argue that it will not make for poor utility management, but will enable utilities to make investments that are in the ratepayer's long-run interest. This issue and the need for the type of utility resource acquisition encouraged by including CWIP in rate base are discussed below in the subsection on the adequacy of electricity supply. That discussion concludes that there is doubt that the types of long leadtime, capital-intensive resources encouraged by CWIP in rate base will be needed to meet the demand of consumers for electric energy services beyond those facilities that are under construction at present. Thus, there is considerable doubt that including CWIP in rate base on an across-the-board basis, as under the new Commission rule, is necessary to encourage utilities to make investments that will lower costs because they will increase efficiencies.

On the basis of the available evidence then, there is no question that inclusion of CWIP in rate base according to the Commission rule will cause a rate increase, an increase that will equal six percent per annum for two straight years and, cumulatively, exceed 12 percent after three years for some customers. On the other hand, there is no evidence that this increase will result in rate decreases of any magnitude in the foreseeable future or even that rates will be lower than they otherwise would be. In addition, while inclusion of CWIP would reduce investor risk on a case by case basis, in part because of risk tranfer to ratepayers, there is no assurance that such reduced risk will be passed on to ratepayers in the form of lower rates at any time or that CWIP will encourage utilities to build efficient resources. Finally, even if it could be shown that at some point rates would be lower under CWIP than under AFUDC, whether such lower rates, procured at the expense of higher rates now, would be in the consumers' interest is another matter entirely.

The Committee believes that the rate increase occcasioned by includng CWIP in Commission rate bases are tangible and, in many cases, substantial. The Committee also believes that the purported rate level benefits argued by proponents of CWIP in Commission rate bases are tenuous at best. Such purported benefits do not support a decision to allow the inclusion of CWIP in Commission rate bases on an across-the-board basis.

IMPACT ON THE FAIRNESS OF RATES

Opponents of CWIP in rate base argue that many ratepayers, in particular elderly ratepayers, will end up paying for powerplants from which they will derive little or no benefit when CWIP is included in rate base. When powerplants take eight to 14 years to build and have a useful life in excess of 30 years, many ratepayers will not live to see a full return on their CWIP "investment."

Proponents of the inclusion of CWIP in rate base often acknowledge the mismatch of costs and benefits occasioned when CWIP is included in rate base but argue that, if utilities cannot or will not build necessary facilities without CWIP regulation, the mismatch must be tolerated. In the preamble to its new CWIP rule, the Co-mission acknowledges this "interperiod equity" problem but concludes that its existence should not stand in the way of CWIP regulation.

There are two other important "fairness" arguments made by the utility customers whose rates for purchase of electricity from other utilities are regulated by the Commission. One argument is that, under certain circumstances, inclusion of CWIP in Commission rate bases can lead to situations in which a utility will end up paying twice for the same increment of capacity. Utility customers have referred to this situation as the "double-whammy" problem.

One manifestation of "double-whammy" may occur when a wholesale utility customer participates in the construction of a powerplant with its supplier. In these instances the customer must finance the construction of its interest in the powerplant. If its supplier is permitted to include CWIP associated with its portion of the new powerplant in its rate base, the customer will end up paying not only for its portion of the powerplant but for some of the costs of that portion owned by its supplier. In instances in which the customer's portion of the new powerplant is substantial enough to permit it to generate sufficient electricity to meet its needs after the powerplant is in service, the customer will have been required to help pay for capacity that it will not use, in effect to pay for the same increment of capacity twice. Other manifestations of "double-whammy" may occur when a customer is building its own capacity or when it is planning to leave its present supplier. Depending on the circumstances of the situation, it may not be fair to require utility customers in these situations to pay CWIP-based rates.

The potential for "double-whammy" is considerable. Joint construction of powerplants is a common phenomenon in the utility industry. Nearly 50 powerplants in operation or under construction are co-owned by investor-owned suppliers and their publicly or cooperatively owned suppliers. In addition, a number of publicly or cooperatively owned utilities are building their own powerplants or may plan to leave their present suppliers for other suppliers.

The Commission acknowledges the "double-whammy" problem in the preamble to its rule but states that it does not believe that it should stand in the way of including CWIP in rate base. It appears that the Commission will not even consider the equity of the "double-whammy" situation if raised by a party to a CWIP case arising under the new rule.

A third fairness issue arises out of the inherently contentious environment in which most wholesale firm transactions are carried out: investor-owned electric utilities selling power at wholesale are often in competition for retail sales with their public or cooperative customers. This competition raises the potential that a power supplier will try to sell electricity to its wholesale customers at a rate higher than it sells the same quality of power to its retail customers, thereby creating an incentive among the retail consumers of the utility power purchaser to switch utilities and purchase electricity directly from the power supplier. This phenomenon is known as "price squeeze".

Section 205 of the FPA forbids the maintenance of rates for the sale of electricity that are unduly discriminatory or preferential.

Section 206 empowers the Commission to prescribe rates that are not discriminatory or preferential. Prior to 1976, municipal and cooperative power purchasers at wholesale had argued that these provisions required the FPC to consider the potential for anti-competitive effect of its rate decisions in light of the retail rates of wholesale power suppliers. The FPC, until 1976, had argued that it did not have to consider such effect because it had no jurisdiction over retail rates and, thus, could do nothing about them. However, in 1976, in *Federal Power Commission* v. *Conway,* 426 U.S. 271 (1976), the United States Supreme Court rejected the FPC's position on this matter, saying:

> A jurisdictional sale is necessarily implicated in any charge that the difference between wholesale and retail rates is unreasonable or anticompetitive. If the undue preference or discrimination is in any way traceable to the level of the jurisdictional rate, it is plain enough that [Section 205(b)] would to that extent apply; and to that extent the Commission would have power to effect a remedy under Section 206 by an appropriate order directed to the jurisdictional rate.
>
> *FPC* v. *Conway Corp.,* 426 U.S. at 277.

Thus, since 1976 the Commission has been required to consider the anti-competitive effect of the establishment of rates under the FPA when compared with retail rates of the same power supplier. This requirement extends to the CWIP situation. Inclusion of CWIP in rate base on a 50 percent, across-the-board basis raises the clear potential for anti-competitive price squeezes, particularly because numerous states prohibit the inclusion of any CWIP in rate base and virtually all those that do allow CWIP in rate base do so only on a case-by-case basis, and then often only in the last few years of the construction of a facility.

The Commission acknowledges the potential for anti-competitive price squeezes growing out of its rule, agreeing that the FPA requires the Commission to "foster competition in the electric utility industry, particularly at the wholesale level." Page 112, Order 298. Thus, the Commission agrees that it must consider price squeeze in individual CWIP cases if raised. However, the Commission notes that its "stated policy [is] not to remedy a price squeeze it is is due solely to state regulatory action or inaction." Footnote 97, Order 298. Since price squeeze, per se, does not exist except with reference to retail rates, it would appear that, while the Commission has acknowledged that it is required to consider price squeeze, it does not intend to alter its CWIP policy on a case-by-case basis simply because of the retail rates of power suppliers. This would create a situation in which the Commission will consider anti-competitive effect resulting from different retail and wholesale policies, but do nothing about it.

Thus, inclusion of CWIP in Commission rate bases raises substantial fairness issues. The interperiod equity problem exists in all cases in which CWIP is included in rate base. The other problems may be severe, depending on the facts of the case.

The Committee believes that these fairness issues are substantial. The general "interperiod equity" problem caused by CWIP argues in favor of the use of the inclusion of CWIP in rate base as a regulatory remedy only on an extraordinary basis. The "double-whammy" and price squeeze problems should be considered by the Commission, on a case-by-case basis, as they are raised by parties contesting the inclusion of CWIP in rate base.

IMPACTS ON THE ADEQUACY OF CAPACITY

The central justification argued by the Commission for inclusion of CWIP in rate base is to overcome what the Commission calls the "capital aversion" of utilities under present financial and regulatory conditions. That is, the Commission believes that existing regulation is causing utilities to refrain from making capital investments that are in the long-run interest of ratepayers in reliable and least-cost electricity supply. Inclusion of CWIP in rate bases, the Commission states, can help to overcome this tendency because it increases cash flow, at the very time that a utility needs cash, during the construction of a facility.

The Commission cites the rash of powerplant cancellations since 1975 as support for its contention that utilities are capital averse. However, in the preamble to its rule, the Commission acknowledged that cancellation of some capacity is attributable to reduction in the rate of growth in demand and not to capital aversion caused by poor utility financial health. Support for this view comes from other sources as well. In a survey conducted for the Energy Information Administration, when asked the cause of the cancellation of a nuclear powerplant, the answer given by utilities more than any other was lower forecasted load growth, not financial difficulty. See Nuclear Plant Cancellations: Causes, Costs and Consequences. Energy Information Administration, April 1983.

Assuming, for argument's sake, however, that past cancellations exemplify to some degree capital aversion caused by financial difficulties related to regulation, the question arises whether utilities remain capital averse or, if so, if they are capital averse because of financial difficulty attributable to regulation, in particular Commission regulation.

In the preamble to the new CWIP rule, the Commission cites two sources of regulatory bias against capital investment. The first source is described as ". . . utilities' inability to earn a return equal to their cost of capital." Page 32, Order 298. However, the Commission states clearly, "In the end, the remedy for inadequate returns is adequate ones." Page 33, Order 298. The combination of high rates of return allowed by the Commission in recent years with future test periods raises considerable doubt whether Commission-jurisdictional rates of return contribute in any way to utility capital aversion. And even if they did so contribute, the remedy is to regulate so that rates of return are adequate, as the Commission argues.

The second source of regulatory bias cited by the Commission against new investment is the "cash flow problem created by the high cost of new baseload plants in relation to the present rate base of *some* utilities" (Emphasis added), Page 34, Order 298. Whether this bias exists with respect to Commission regulation, and if so, whether it is in the public interest to try to overcome it by altering CWIP regulation are legitimate issues. However, the Committee notes that, even if these issues are resolved in the affirmative, the Commission itself has tacitly acknowledged that the problem exists only for some utilities, those with cash flow problems.

Even if one assumes, again for the sake of argument, that utilities display capital aversion attributable to Commission regulation, such an assumption says nothing about whether it would be in the public interest to overcome that aversion by including CWIP in rate base. Capital aversion is only a problem if it threatens shortages of resources to meet the demand of consumers at least cost for the energy services such as light, heat and mechanical energy which consumption of electricity enables. Otherwise, capital aversion is in the best interests of ratepayers, utilities, their investors and the economy in general in that it means that utilities will avoid wasting capital in facilities that are not needed.

Thus, it is appropriate to scrutinize whether there is, or looms, such a resource shortage. Only in those events does the capital aversion rationale for including CWIP in Commission rate base have any justification, assuming that utilities show capital aversion attributable to Commission regulation, a questionable assumption. (Some have questioned whether, even if such a shortage can be demonstrated, inclusion of CWIP in Commission rate bases is an effective remedy due to the relatively minor amount of most company's sales regulated by the Commission. With few exceptions, Commission jurisdictional sales are a very small, 10 percent or less, fraction of companywide sales. By itself, inclusion of CWIP in Commission rate base will not likely encourage utilities to undertake extensive new capital intensive investment programs that they would not otherwise undertake. On the other hand, establishment of CWIP policy at the Commission may have an effect beyond Commission rates because some states may adopt Commission CWIP policy as they have adopted other electric regulatory policies adopted initially by the FPC or Commission. In addition, simply because the actions of one regulatory agency may, by themselves, have little effect on utility capital investment decisions, this does not mean that that agency's policy should disregard such effects, particularly as they may be combined with the effects of the policies of other regulatory agencies by a utility when investment programs are being considered.)

For the present, there is no shortage of generation capacity to meet peak load. Adequacy of capacity to meet demand is measured by comparing peak demand with generating capacity reserves. On a national average basis, generating capacity reserve margins in relation to annual peak load have grown steadily in recent years. According to the Library of Congress, in 1980, generating reserves were at 31 percent above peak demand. In 1982, they were over 40 percent above peak demand. Twenty percent reserve margins are widely considered adequate. Thus, in terms of assurance of reliability, this level of reserves is more than adequate.

Some have argued that a portion of existing generating capacity is not economic and should be replaced by new capacity that would be encouraged by the inclusion of CWIP in rate base. In particular, the argument has been made that coal and nuclear generation capacity should be built to replace oil-fired capacity and, perhaps, some gas-fired capacity. Review of analysis supportive of this argument indicates that its conclusions are quite sensitive to assumptions regarding future prices of oil, gas and nuclear and coal capacity any fuel. Furthermore, some of this analysis is deficient, in that there is a failure to compare the cost-effectiveness of new generation capacity in replacing existing capacity with other means of making such replacement, such as customer efficiency improvements, power wheeling, cogeneration, small power production and additional transmission capacity.

While sufficient capacity exists at present, what about the future? If there looms such a shortage within the time in which it takes to build new powerplants, proponents of CWIP in rate base argue that utilities should be permitted to include CWIP in rate base right now to be sure that the necessary resources are constructed to meet demand. This assertion raises two questions. First, could there be such a shortage? Second, if there could be, of what resources is it a shortage?

With respect to the first question, the Subcommittee on Energy Conservation and Power heard the testimony of Alvin Kaufman, Senior Specialist, Congressional Research Service, Library of Congress. Mr. Kaufman testified:

> . . . most areas of the country should be in good condition in terms of electric generating capacity by 1995, given a medium capacity [addition] case and moderate economic growth. The combination of demand uncertainty, a currently overbuilt system, and financial constraints has created caution in the industry regarding capacity additions. This is for the best, given the probable excess of plants.

If economic growth were more vibrant, however, shortages could occur by 1995 according to Mr. Kaufman.

Mr. Kaufman's projections for his testimony assume that growth in real GNP and demand for generating capacity are linked in an approximately one-to-one relationship. If GNP and demand for electricity can be de-coupled, the chance of any such shortages is greatly reduced.

There is growing evidence that growth in real GNP and in demand for electricity, at least as conventionally produced, are not inextricably linked. Considerable support for this de-coupling of GNP from demand for conventionally produced electricity comes from a study by the Congressional Research Service for the Energy Conservation and Power Subcommittee. The Subcommittee asked CRS to assess to potential for cost-effective efficiency improvements, passive solar, productivity improvements and other resources alternative to new powerplants meet demand for electric energy services in 1990, 1995 and 2000 and to estimate the need for new conventional powerplants assuming that the alternatives that were cost-effective, when compared with new powerplants, were acquired first.

CRS submitted an interim report on its study to the Subcommittee on June 24, 1983. In that Report, CRS stated its belief that there exist sufficient efficiency improvements and other alternative measures available that are cost-effective that there may be no need to bring on line significant additional conventional powerplant capacity beyond the approximately 150,000 megawatts already under construction or in early regulatory approval processes, through the year 2000. Thus, there would be no shortage of generating capacity. The implication of the report is that, while real GNP and demand for electric energy services may be correlated on a one-to-one basis, real GNP and demand for conventionally produced electricity is not so correlated. Such demand may grow at well less than real GNP, especially if the cost of new powerplants continues to exceed the average cost of electricity, a likelihood on many systems for the foreseeable future.

In light of the apparent potential for less costly, shorter lead time resources to meet demand for electric energy services, it could be seriously wasteful of capital to change utility regulation now in order to encourage utilities to begin to build a new round of large powerplants that may not be cost-effective resources. The potential for waste would appear to exist, since many utilities still do not factor the potential of efficiency improvement and other load dampening measures into their load forecasts, according to a recent U.S. General Accounting Office Report issued June 22, 1983, entitled "Analysis of Electric Utility Load Forecasting."

On June 8, 1983, the U.S. Department of Energy issued a study entitled "The Future of Electric Power in America: Economic Supply for Economic Growth." In this report, DOE claims that utilities will have to build 438,000 megawatts of new conventional central station powerplant capacity to meet demand by 2000. In a letter to Chairman Dingell dated July 18, 1983, DOE also suggested that inclusion of CWIP in rate base is appropriate to encourage untilities to build additional conventional capacity.

The DOE study offers a picture of the future in stark contrast with that of the CRS report. A problem with the DOE report is that it did not analyze the economic potential of efficiency improvements and other alternatives to new powerplants to meet demand. Instead, it factors in conservation and some other alternatives through demand elasticities that result in an extrapolation of the one-to-one relationship between GNP and demand for conventionally produced electricity, a relationship that apparently no longer need exist. The failure of the DOE Study to analyze the economic potential of resources alternative to new powerplants casts doubt over the Study's conclusions.

In conclusion, the Committee has decided that fear of generating capacity shortages, in itself, does not compel the conclusion that CWIP should be included in Commission rates bases on an across-the-board basis. The need for new capacity as well as equities and impacts of CWIP should be considered on a case-by-case basis.

IMPACT ON ECONOMIC EFFICIENCY IN ENERGY SERVICES MARKETS

When CWIP is included in rate base, rates go up immediately. In the preamble to its new CWIP rule the Commission argues that the increased price of electricity occasioned by CWIP in rate base is a good price signal. If a facility built under CWIP regulation is completed, inclusion of CWIP in rate base can lessen the rate shock when the resource is placed in service. The Commission also argues that the easing of rate shock is another virtue of CWIP.

The price signal argument has two problems. First, price signals are only valid if a resource whose cost is being communicated is an optimal one, that is, is cost-effective. If inclusion of CWIP in rate base should encourage utilities to build new powerplants when such powerplants are not cost-effective, communicating their costs to ratepayers through CWIP rates will overstate the amount of conservation that is really cost-effective. Another way of saying this is that higher prices merely for the sake of more conservation is not sound policy.

Second, utility price signals are valid only when customers, through changing their consumption in response, enable a utility to avoid the cost of a resource. By definition, if CWIP in the rate base is the price signal, at least a portion of the costs of the resource being financed through CWIP rates cannot be avoided.

Inclusion of CWIP in rate base does ease rate shock. However, for a number of reasons, the rate shock benefit of CWIP does not, in itself, override other considerations raised by CWIP. First, rate shock associated with new powerplants coming on line may not be significant except in a few instances. A 1982 Salomon Brothers Report indicated that most nuclear plants coming on line between then and 1984 would not create dramatic rate increase requests. Some plants coming on line after 1984 would, however, create the potential for large rate increases.

Second, however, the potential rate shock of including those powerplants built under AFUDC regulation in rate base will often be moderated by offsetting fuel savings. Third, rate shock is further moderated by the likelihood that there will be more sales of electricity over which to spread the costs of a new plant when construction is completed than when it was begun. Fourth, there are means other than including CWIP in rate base, or in conjunction with including some CWIP in rate base, that can moderate rate shock better than CWIP in rate base by itself. These include mirror CWIP, explained below. Fifth, the very customers—in this case utilities themselves—which advocates of CWIP in rate base say they want to protect against rate shock by including CWIP in rate base are not persuaded.

The Committee believes that neither the price signal nor rate shock arguments for CWIP offered by the Commission justifies inclusion of CWIP in rate base on the across-the-board basis reflected in the Commission's new CWIP rule.

[redacted]

~~The Committee believes that the across-the-board treatment of CWIP for investments other than in fuel conversion and pollution control facilities established in the Commission rule issued on May 16, 1983 is unwarranted and inappropriate in light of the significant problems which inclusion of CWIP in rate base can cause. The Committee amendment is needed to establish CWIP policy and procedures that treat inclusion of such CWIP in rate base as an extraordinary remedy, on a case-by-case basis, in light of the finan~~

STATEMENT OF HON. JOHN H. CHAFEE, A U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator Chafee. I would just like to thank all those who are coming. Obviously, we want to hear—and we will hear from those who are opposed as well as those who are present.

And I understand the attorney general of our State is here, Attorney General Roberts. I know he's on the witness list. And a member of our public utilities commission, Ms. Kilmarx. And we will be hearing from them in a few minutes.

Of course, Mr. Chairman, the purpose of this legislation is to amend the Federal Power Act to provide FERC with limited discretion to allow the construction work in progress cost in utility rate base.

FERC imposed a rule a year ago that would not now allow utilities to pass on these construction work in progress to their wholesale customers. And prior to this rule change, of course, that could not be done except in three instances: for pollution control facilities; for fuel conversions; and, for situations where the utility was in severe financial difficulty.

I would ask the balance of my statement be included in the record.

Senator Murkowski. It will appear in the record.

[The prepared statement of Senator Chafee follows:]

Statement by
SENATOR JOHN H. CHAFEE
HEARING ON S. 1069
CONSTRUCTION WORK IN PROGRESS (CWIP)

Subcommittee on Energy Regulation
April 12, 1984

Mr. Chairman, I would like to thank all of those who have come here today to participate in this hearing. It should be useful to the Committee. The witnesses represent a broad spectrum of views on this issue. Rhode Island is being represented by the State Attorney General and a Public Utilities Commissioner. Senator Pell testified in support of my bill, and I want to thank him.

The purpose of this legislation is to amend the Federal Power Act to provide the Federal Energy Regulatory Commission (FERC) with limited discretion to allow "Construction Work In Progress"(CWIP) costs in a utility's rate base. The Federal Energy Regulatory Commission (FERC) imposed a rule a year ago that would now allow utilities to pass on these CWIP costs to their wholesale customers. Prior to this rule change, CWIP costs could only be passed on to wholesale customers in three instances:

1. for pollution control facilities,
2. for fuel conversions, and

3. in situations where a utility was in severe financial difficulty.

This FERC change represented a deviation from historical principles of utility ratemaking. Traditionally, utilities could not charge ratepayers for the cost of constructing a new facility until a plant came on line and was actually producing energy. The new FERC rule changes this established policy and would now allow any utility -- regardless of its financial condition--to include up to 50 percent of its CWIP costs in its wholesale rate base. There are a number of reasons why this change does not represent a good policy decision.

Under the traditional "used and useful" principle of utility ratemaking, the shareholder -- not the ratepayer -- should bear the financial burden of new construction. The FERC rule change would transfer the risk of an investment in an electric facility from investor to ratepayer, when CWIP costs are included in rate base. These transferred risks would include risks that:

1. a powerplant on which construction has begun will be abandoned before completion;
2. that a facility in which a utility has invested will turn out to be uneconomical;
3. that utility managers will be, at least partially removed from the discipline of financial markets; and

4. that, by inclusion of CWIP costs in the rate base, poor resource choices by utility managements will be encouraged.

If you have been reading the newspapers lately, you must realize that these are very real risks in today's environment.

Furthermore, one of the reasons I feel this new FERC rule should be rejected is that it will hinder efforts to promote energy conservation and the development of less expensive alternatives, because utilities are free to pass on the costs of building new plants before they are completed, whether or not the plant is, in fact, needed.

It is my belief that the across-the-board treatment of CWIP as established in the Commission rule issued on May 16, 1983, is unwarranted and inappropriate. The electric utility industry has demonstrated a marked improvement in its financial condition in the recent past, without the inclusion of CWIP costs in the rate base. What I feel is needed, instead, is to establish a policy and procedure that would treat inclusion of CWIP in rate base as an extraordinary remedy, on a case-by-case basis, in light of the financial condition of the applying utility, need for new facilities and the impact on customers.

This is exactly what my bill, S. 1069, proposes to do.

The bill allows FERC to continue to permit the inclusion of CWIP in rate base for pollution control facilities and fuel conversions.

A utility may also include these costs if it can demonstrate that it is in severe financial difficulty. Further, the bill goes beyond traditional precedent in that it defines such difficulty and requires a utility that has been mismanaged to show that the mismanagement has been corrected and will not impede future restoration of the utility's financial condition. In short, CWIP relief must be based on clear and convincing evidence.

This hearing provides a forum in which we can scrutinize the current regulatory system and determine how it can be improved. We are here to learn from the knowledge and experience of those who will testify in order to better accomplish this goal. I again want to thank all who are participating in this process.

Senator CHAFEE. Mr. Chairman, I've got one difficulty; and that is, as you remember, last night we were just starting at 10 o'clock on the D'Amato amendment dealing with social security, and I am the prime spokesman for the Finance Committee against that amendment. I believe we indicated we would be starting this at 10:30. So I will have to go over, leave here at about 20 past. I suspect that we will be through by 11 and have a vote. But then I would be free to come back. I know you have time difficulties, too. So I will be able to come back and——

Senator MURKOWSKI. My particular difficulty is that I am in support of the amendment. [Laughter.]

So you have the distinct advantage of going——

Senator CHAFEE. Well, why don't we work it out that you just stay here and I'll handle things there.

Thank you very much.

Senator MURKOWSKI. Thank you very much. And we will let the witnesses in the group know who comes out on top. We will find out if it's better to go over there or better to stay here. Have a good day.

The first panel is the Honorable Raymond J. O'Connor, Chairman of the Federal Energy Regulatory Commission; the Honorable Jan Mares, Assistant Secretary for Policy, Safety and Environment, U.S. Department of Energy.

We wish you a good morning. You may proceed in any order that you wish. We want to assure all witnesses that your testimony will be entered into the record as if read.

We would encourage you to summarize your statement. I'm told by the staff director of the Energy Regulation Subcommittee that we have some lights that we're dusting off, but after 5 minutes you will notice that I'll begin to get a little restless, and at some point after that I may lift the gavel and drop it.

With that, I would request that you proceed, Mr. Chairman.

STATEMENT OF HON. RAYMOND J. O'CONNOR, CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION

Mr. O'CONNOR. Good morning, Mr. Chairman. Good morning, Senator Chafee.

With those remarks, Mr. Chairman, I'd like to tell you before I get into my oral statement that it has been summarized; it hasn't been summarized to a large degree, because of the—as you referred to—the arcane nature of this subject, so I think my statement may be——

Senator MURKOWSKI. I don't think I wrote it, but I just mentioned it.

Mr. O'CONNOR. My statement may be a little bit on the long side. The Assistant Secretary's statement is going to be a little bit on the short side, so I think between the two we will probably average out into an acceptable time.

I appreciate this opportunity to discuss with you the issues raised by the proposals pending before the subcommittee.

My comments today focus on three areas. First, I would like to provide some technical background, explaining the two basic ratemaking alternatives used to recover the financing costs of construction programs.

Both approaches allow utilities to recover 100 percent of prudently incurred financing costs. They differ primarily with respect to the timing of the cost recovery.

Second, I would like to describe the Commission's 1983 rule; and, third, my statement will conclude by summarizing the Commission's experience under the rule over the last 9 months.

Under the Federal Power Act, the Commission is directed to establish rates for jurisdictional electric utilities which are just and reasonable.

While no ratemaking methodology is mandated by the statute, certain principles have been developed over the years. The first and overriding of these principles is that the Commission must establish rates at the lowest reasonable levels, consistent with adequate long-term service. Accordingly, in establishing just and reasonable rates, the Commission must look not only at today's rates and today's ratepayers, but at tommorrow's rates and future rate payers. Rates must be based on the utility's cost of providing service, giving utility a reasonable opportunity to recover all costs that are prudently incurred. Rates must also be set in a manner that will allow the utility to attract sufficient capital for its purposes.

When a utility embarks on a construction program, it incurs costs prior to the time that the facilities are used for providing the service.

These costs are two types. First, there are direct construction costs, sometimes referred to as the cost of bricks and mortar. These costs are recovered from ratepayers through depreciation charges over the useful life of the facilities.

In addition, the utility must finance these direct construction costs prior to the time that the facilities are placed in service and begin to be depreciated.

These financing costs, sometimes referred to as carrying charges, consist of the utility's cost of debt and equity capital.

It is the recovery of these financing costs—not the direct construction costs—that is involved in the CWIP debate.

More precisely, the debate is over the appropriate time at which these financing costs should be recovered. Let me explain.

Without CWIP included in the rate base, the utility includes on its books as income, an accounting entry consisting of the financing costs associated with its construction program.

This accounting entry is known as the allowance for funds used during construction, or AFUDC.

This AFUDC entry consists of the utility's cost of capital related to construction, including both debt and equity. These financing costs are not currently recovered from ratepayers, however, but are deferred that is, capitalized, and included as part of the cost of construction work in progress.

Thus, while AFUDC is recorded on the utility's books as income, the utility in fact has received no cash income.

In essence, AFUDC reflects future cash income which will be received through depreciation charges when the AFUDC costs are placed in rate base.

My assistant, Mr. Philip Marston, is going to help me out with these charts.

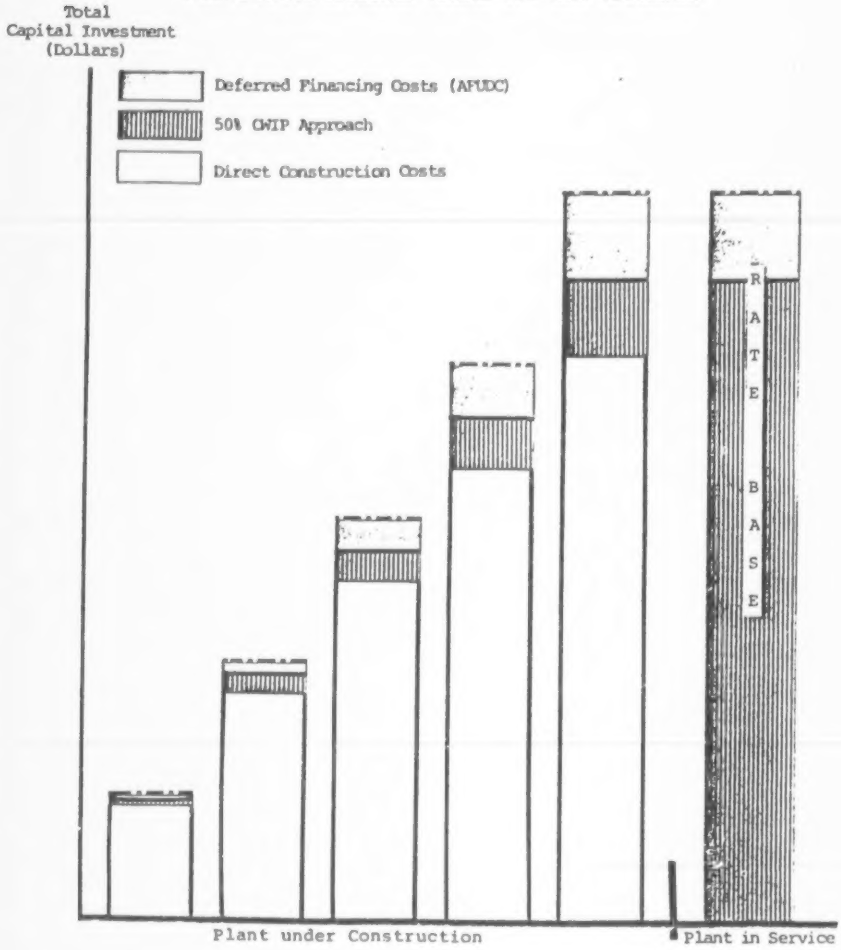
Chart I illustrates this approach, showing separately both direct construction costs and deferred financing costs for a utility with a single plant under construction.

[The chart follows:]

CHART I

PLANT CONSTRUCTION COSTS AND THEIR IMPACT ON RATE BASE

(USING AFUDC APPROACH VERSUS 50% CWIP APPROACH)



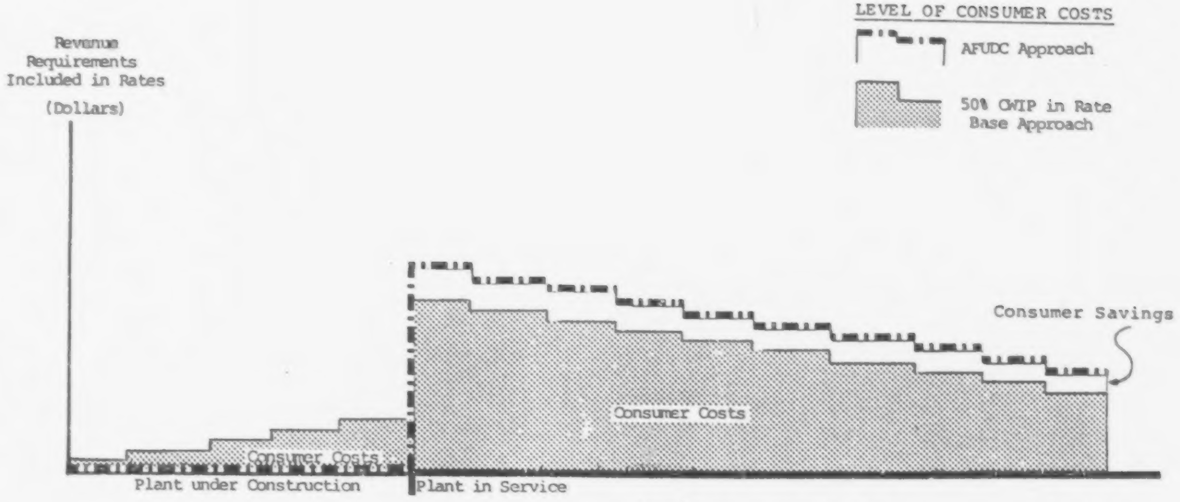
When the plant is placed in service, both the direct constuction costs and the deferred financing costs, or AFUDC, are included in the utility's rate base. This is illustrated by the first overlay on chart I.

The utility then attempts to earn its allowed return on the total amount.

The rate impact of the deferred recovery of financing costs during construction is illustrated by chart II.

[The chart follows:]

IMPACT ON UTILITY REVENUE REQUIREMENTS OF DEFERRING THE FINANCING COSTS OF A NEW PLANT
(AFUDC VERSUS 50% CWIP APPROACHES)



IMPACT ON CONSUMER RATES

CHART II

If the amounts accrued do not adversely affect the utility's cost of capital, rates to customers will not be increased during the construction period.

However, rates do increase when the plant is placed in service, and its costs are included in the rate base. Then as the plant is depreciated, costs and rates gradually decline over time.

Now, if CWIP is included in the utility's rate base, the utility begins to recover the financing charges—its cost of acquiring debt and equity capital—during the construction period rather than after the plant begins operating.

In contrast to the AFUDC approach, however, the income is cash income and thus a source of funds for the company.

If financing charges are already recovered during the construction period, the amount to be deferred for future collection from ratepayers is reduced.

This means a smaller rate base when the plant goes into service, as shown by the overlay on chart No. II.

As a result, the utility's future rates are lower than they would have been had CWIP been excluded from the rate base. This comparative rate impact for a given investment is illustrated by chart 2.

In short, the economic differences between the two ratemaking methodologies relate to the timing of the recovery of financing costs and to the effects of cash versus noncash earnings.

With AFUDC, a utility records on its book a noncash income allowance which is deferred, that is, capitalized, during construction.

With CWIP included in the rate base, the utility recovers the financing charges, in cash, during the construction period.

Now, getting to the Commission's 1983 CWIP rule. Prior to 1976, the Commission relied solely on the deferred recovery methodology, or AFUDC. This policy was well suited to the engineering and economic realities of the time, for throughout the 1940's, 1950's and 1960's technical improvements and efficiences of scale meant that new facilities lowered rates, not raised them.

Moreover, new facilities could be added in about 3 to 5 years, limiting the period of time during which financing costs were accumulated.

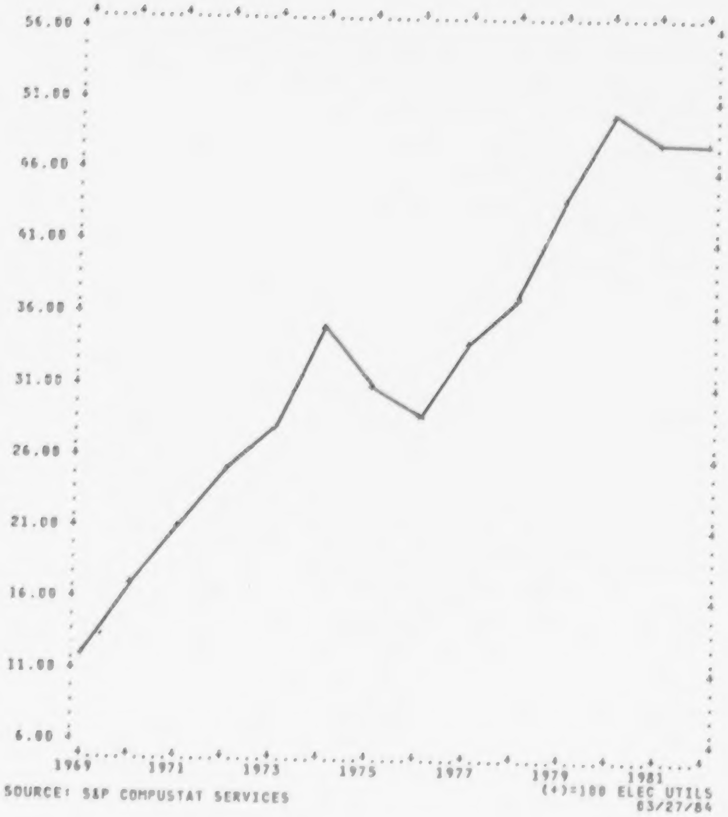
But as construction programs became more expensive in the late 1960's, and as the leadtimes for constructing plants became longer, financing costs grew to be a larger share of total costs.

Without CWIP in the rate base, noncash accruals of AFUDC grew to represent a larger and larger share of the utilities 'net income, rising from about 12 percent of net income to over 30 percent by 1975, and approximately 50 percent today.

[The chart follows:]

CHART III

NON-CASH AFUDC AS A PERCENTAGE
OF TOTAL UTILITY INCOME



SOURCE: S&P COMPUSTAT SERVICES

But utilities could not use the noncash AFUDC income as a source—as you see on the chart—of internally generated funds.

Thus, during the same period as AFUDC was rising, the debt instruments of utilities were being downgraded by investor rating services.

Senator MURKOWSKI. Mr. Chairman, I wonder if you could summarize.

Mr. O'CONNOR. I would like to get to the main points of the rule itself.

First, inclusion of CWIP is not automatic. Under the 1983 rule, as under the 1976 rule, the inclusion is not automatic, but is considered on an individual rate case-by-rate case basis and filing by filing.

Under the current rule, before CWIP can be included in rate base, the utility must file and prove that the amounts of CWIP sought are properly allocated and that the costs were prudently incurred.

The second aspect is review of prudence. As noted above, a utility is only entitled to an opportunity to recover its prudently incurred costs. CWIP is no exception.

And third is the so-called double-whammy concept. This rule addresses directly the concern raised by many wholesale customers that they will have to pay twice for the financing costs associated with new capacity.

If they can show that they're not responsible for the decision to build the plant for which CWIP is sought and will, in fact, not purchase firm power from the plant, they will not be allocated any of the CWIP costs associated with the facility in question.

Fourth, is treatment of abandoned plants. The Commission's policy regarding abandoned projects precludes utilities from recovering any costs of abandoned projects that were not prudently incurred.

Moreover, even with regard to prudently incurred costs, shareholders are required to bear a portion of those costs.

The 1983 rule makes no change in the substance of the Commission's policy in this regard.

Turning to the Commission's experience to date, we have 15 CWIP cases pending before the Commission. Twelve of them have been set for hearings; one has been settled; and, one is in settlement negotiations. With respect to the last one, the filing has not been accepted and there has been a deficiency letter because the information required under the filing requirements of the rule has not been supplied.

So the current rule is designed to encourage least-cost strategies, provide more accurate price signals, and help mitigate the rare shock of sudden price increases.

I would like to assure you, Mr. Chairman, and the committee that I'm committed to making available to the Congress such information regarding the developments of this rule as may be properly requested so that the Congress may have before it a full and complete factual report on the effects of this rule on jurisdictional customers.

Thank you.

[The prepared statement of Mr. O'Connor follows:]

STATEMENT OF
RAYMOND J. O'CONNOR
CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION
BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

April 12, 1984

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I appreciate this opportunity to discuss with you the issues raised by the proposals pending before the Subcommittee concerning the inclusion of the cost of Construction Work in Progress (CWIP) in utility rate base. The bills before you are designed to modify substantially the Federal Energy Regulatory Commission's (FERC) 1983 rule allowing jurisdictional utilities to file to include certain CWIP in their jurisdictional rate base.

My comments today focus on three areas. First, I would like to provide some technical background, explaining the two basic ratemaking alternatives used to recover the financing costs of construction programs. Both approaches allow utilities an opportunity to recover 100 percent of prudently incurred financing costs. They differ primarily with respect to the timing of cost recovery.

Second, I would like to describe the 1983 rule, highlighting the key differences and similarities between the new rule and the earlier regulatory policy. Third, my statement concludes by summarizing the Commission's experience under the new CWIP rule over the last nine months.

I. Background.

Under the Federal Power Act, the Commission is directed to establish rates for jurisdictional electric utilities which are "just and reasonable." The statute does not mandate any particular ratemaking methodology. Indeed, the courts have generally given considerable latitude to the Commission in developing and revising ratemaking methodologies to implement the statutory directive.

A. The ratemaking principles. While the methodology is not dictated by the statute, certain principles have been developed over the years and have been affirmed by the reviewing courts. The first and overriding principle is that the Commission should establish rates at the lowest reasonable levels consistent with adequate long-term service. Accordingly, in establishing rates, the Commission must look not only at today's rates and today's ratepayers but at tomorrow's rates and future ratepayers as well.

The second principle is that just and reasonable rates must be based on the utility's cost of providing service.

Thirdly, rates must be set in a manner that allows the utility to attract sufficient capital to be used for utility purposes.

Finally, a utility is entitled to a reasonable opportunity to recover all of these costs that are prudently incurred.

B. AFUDC and CWIP. When a utility embarks on a construction program it incurs costs prior to the time that the facilities are used for providing service. These costs are of two types. First, there are the direct construction costs, sometimes referred to as the cost of "bricks and mortar." These costs are recovered from ratepayers through depreciation charges over the useful life of the facilities.

In addition, the utility must finance these direct construction costs prior to the time that the facilities are placed in service and begin to be depreciated. These financing costs -- sometimes referred to as "carrying charges" -- consist of the utility's cost of debt and equity capital. It is the recovery of these financing costs -- not the direct construction costs -- that is involved in the CWIP debate. More precisely, the debate is over the appropriate time at which these financing costs should be recovered. Let me explain.

Without CWIP included in rate base, the utility includes on its books as "income" an accounting entry consisting of financing costs associated with its construction program. This accounting entry is known as the Allowance for Funds Used During Construction (AFUDC). This AFUDC income entry consists of the utility's cost of capital related to construction, including both debt and equity. These financing costs are not currently recovered from ratepayers, however, but are deferred, i.e., capitalized, and included as part of the cost of construction work in progress. Thus, while AFUDC is recorded on the utility's books as "income," the utility in fact has received no cash income. In essence, AFUDC reflects future cash income which will be received through depreciation charges when the AFUDC costs are placed in rate base.

Chart I illustrates this approach, showing separately both direct construction costs and deferred financing costs for a utility with a single plant under construction.

When the plant is placed in service, both the direct construction costs and the deferred financing costs (AFUDC) are included in the utility's rate base (see Chart IA). The utility then attempts to earn its allowed return on the total amount.

The rate impact of deferring recovery of financing costs during construction is illustrated by Chart II. If the amounts accrued do not adversely affect the utility's cost of capital, rates to customers will not be increased during the construction period. However, rates do increase when the plant is placed in service and its costs included in rate base. Then, as the plant is depreciated, costs and rates gradually decline over time.

Now, if CWIP is included in the utility's rate base, the utility begins to recover the financing charges -- its costs of acquiring debt and equity capital -- during the construction period rather than after the plant begins operating. In contrast to the AFUDC approach, however, the income is cash income and thus a source of funds which can be used to pay interest on bonds, or make regular dividend payments.

If financing charges are already recovered during the construction period, the amount to be deferred for future collection from ratepayers is reduced. This means a smaller rate base when the plant goes into service (see Chart IB). As a result, the utility's future rates are lower than they would have been had CWIP been excluded from rate base. This comparative rate impact for a given investment is illustrated by Chart IIA.

In short, the economic differences between the two ratemaking methodologies relate to the timing of the recovery of financing costs and to the effects of cash versus non-cash earnings. With AFUDC, a utility records on its books a non-cash income allowance which is deferred, i.e., capitalized, during construction. With CWIP included in rate base, the utility recovers the financing charges, in cash, during the construction period.

II. The Commission's CWIP Rule.

A. Genesis of the Rule. Prior to 1976, the Commission relied solely on the deferred recovery (AFUDC) methodology. This policy was well suited to the engineering and economic realities of the time, for throughout the 1940's, 50's and 60's, technical improvements and efficiencies of scale meant that new facilities lowered rates, not raised them. Moreover, new facilities could be added in about three to five years, limiting the period of time during which financing costs were accumulated.

But as construction programs became more expensive in the late 1960's, and as the lead times for constructing plants became longer, financing costs grew to be a larger share of total costs. Without CWIP in rate base, non-cash accruals of AFUDC grew to represent a larger and larger share of utilities' net income, rising from about 12 percent of net income to over 30 percent by 1975. This is illustrated by Chart III.

But utilities could not use the non-cash AFUDC as a source of internally generated funds to help finance the ongoing construction programs. This contributed to the increased financial difficulties experienced by the electric utility industry. Thus, during the same period as AFUDC was rising, the debt instruments of utilities were being downgraded by investor rating services. During the 1972 to 1976 period, downgrading of utilities' bonds outnumbered upgradings by 130 to 16.

The deterioration in investment quality of utility bonds necessarily meant that utilities would have to pay higher interest rates to attract capital in competition with other investment opportunities. As investment in utility stocks and bonds became less secure, utilities had to pay a premium to attract new sources of capital. These increased costs meant higher rates to customers.

During this period, regulatory bodies across the nation began reconsidering ratemaking policies. The inclusion of CWIP in rate base was merely one of the tools considered.

In 1976, the Commission modified its regulations to allow utilities to file to include all CWIP associated with construction programs to control pollution or to convert facilities to use fuels other than natural gas or petroleum. A utility could also include additional amounts of CWIP in rate base if it showed that it was experiencing "severe financial distress." The definition of the term "severe financial distress" was left to be developed in individual rate proceedings.

Several utilities filed applications under the 1976 CWIP rule and lengthy hearings commenced. From 1976 to 1980, however, not a single utility was found to qualify under the severe financial distress test. During this same period, interest rates rose to unprecedented peacetime levels. For example, the prime interest rate averaged in excess of ten percent during this period. The high level of interest rates had an enormous and direct effect on utilities' financing costs. With double digit inflation, the continued accrual of these costs to be added to the direct costs of construction meant sharply higher total costs. For example, for a plant with direct construction costs of $1.59 billion which was constructed over a 10 year period in which interest rates averaged 12 percent a year, the financing costs accrued as AFUDC would add an additional $1.5 billion to the total rate base.

In June of 1980, the General Accounting Office (GAO) issued a detailed report on the CWIP issue. That report noted that 33 state commissions then permitted some CWIP to be included in rate base. The total amount of CWIP allowed in rate base by 27 of these states in 1978 was approximately $9 billion. The amount of CWIP allowed by the FERC under the 1976 rule during the same period (all for pollution control or fuel conversion) was approximately $70 million, less than one one-hundredth as much.

The 1980 GAO report criticized the 1976 CWIP rule for being too vague and general. The report specifically recommended that the Commission establish a generic rulemaking proceeding to define the criteria that would justify including CWIP in rate base.

In March of 1981, the Commission convened an informal conference on the financial condition of the electric power industry. Sitting with members of a number of state regulatory commissions, the Commissioners heard voluminous testimony on financial issues affecting the industry, including considerable discussion of the inadequacies of the 1976 CWIP rule.

Finally, in July of 1981, the Commission commenced a rulemaking proceeding to revise the 1976 CWIP rule.

In response to the notice, the Commission received and reviewed two rounds of detailed public comment from literally dozens of parties as well as several hundred comments from individual ratepayers. The record compiled in this proceeding was comprehensive and explored all aspects of the issue. In addition, the Commission held two days of oral argument on the proposal, an unusual step in rulemakings under the Federal Power Act.

The comments reflected widely divergent views on the CWIP issue. The jurisdictional utility companies generally urged the Commission to allow one hundred percent of CWIP to be included in rate base regardless of financial condition, on the grounds that this approach would lower overall costs. Others strongly opposed any policy allowing CWIP to be included in rate base except in cases of severe financial distress.

B. The 1983 Rule. The Commission took an intermediate position. The 1983 rule does not automatically include the cost of any CWIP in utilities' rates. Rather it allows utilities to file to request the inclusion in rate base of up to fifty percent of CWIP. This is in addition to all CWIP associated with pollution control and the conversion of certain facilities away from oil and gas fuels. The fifty percent filing allowance is phased-in such that the inclusion of CWIP may not increase a utility's rates by more than six percent in each of the first two years. The increased rates may go into effect, subject to refund, while the case is litigated. The rule is currently on appeal in the United States Court of Appeals for the District of Columbia Circuit.

Certain features of the rule deserve particular attention.

1. Inclusion of CWIP is not automatic. Under the 1983 rule, as under the 1976 rule it replaces, the inclusion of CWIP in rate base is not automatic, but is considered on an individual rate case-by-rate case basis.

Under the current rule, before CWIP can be included in rate base, the utility must file and prove that the amounts of CWIP sought are properly allocated and that the costs were prudently incurred. Of the thirteen filings considered to date, twelve have been contested and each of these has been set for trial.

2. Review of Prudence. As noted above, a utility is only entitled to an opportunity to recover its prudently incurred costs. CWIP is no exception. Prior to the 1983 rule there was no review of the prudence of a utility's construction costs until the plant was completed and rate treatment was requested. At this stage of the process, of course, review of prudence would likely focus on managerial

decisions made many years earlier. Memories may have faded. Records will be stale.

Under the 1983 rule, the prudence of any construction cost is evaluated, filing by filing, each time the utility seeks to include those costs in rate base. To assist intervenors and staff in evaluating prudence, the rule requires each filing utility to include a statement describing its program for providing reliable and economic power for the next ten years. In addition, this statement must assess the relative costs of adopting alternative strategies for meeting demands for power, including an analysis of alternative production plant (such as cogeneration, small power production, conservation and increased purchased power) and an explanation of why the program adopted is prudent and consistent with a least-cost energy supply program.

While the filing requirements provide some basic information needed to evaulate prudence, additional information may be required. In fact, in a number of cases presently being litigated, both intervenors and the Commission staff are engaged in extensive discovery relating to questions of prudence. Again, this more timely review of prudence would not have occurred under the previous policy until the plant was included in rate base at the completion of the construction period.

3. The "Double Whammy." The rule addresses directly the concern raised by many wholesale customers that they will have to pay twice for the financing costs associated with new capacity. This is a concern for wholesale customers that are presently purchasing power from a jurisdictional utility, but that are developing their own generating facilities to replace the purchased power. If these customers do not purchase power from the jurisdictional utility at the time the utility's new plant goes into service, they will not receive the benefits of that future supply project. Yet if CWIP is included in the supplier's rate base, they fear that they will have to pay the financing costs today for capacity they will not benefit from two, three or four years hence. This has been dubbed by some the "double whammy" concern.

The 1983 rule addresses this potential problem. The Commission stated that customers should not be required to pay rates related to facilities for which they bear no cost responsibility and which will not be used to serve them. Thus, a utility cannot charge a wholesale customer for CWIP if that customer bears no responsibility for the decision to build the plant in question and will in fact not purchase firm power from that plant.

4. Treatment of Abandoned Projects. The Commission's policy regarding abandoned projects precludes utilities from recovering any abandoned project costs that were not prudently

incurred. Moreover, even with regard to prudently incurred costs, shareholders are required to bear a portion of those costs.

The 1983 rule does not change the Commission's policy. A utility must prove the prudence of all costs incurred in its construction project before recovery of an abandoned project cost will be permitted.

Under both AFUDC and CWIP policies, the direct costs of construction are identical and, if prudent, may be recovered. Similarly, the financing costs incurred up to the point of abandonment may be recovered. Financing costs incurred after the decision has been made to abandon the project, however, must be absorbed by the shareholders.

The 1983 rule makes no change in the substance of the Commission's policy in this regard.

Thus, the primary difference between AFUDC and CWIP policies, in terms of subsequent abandonment, is the timing of the recovery of prudently incurred financing costs. That is to say, financing costs on construction capital, if prudent, are recoverable before abandonment under a CWIP policy and after abandonment under an AFUDC policy.

III. Experience to Date Under the CWIP Rule.

The Commission's CWIP rule went into effect on July 1, 1983. Since that time 15 companies have filed to include some amount of CWIP in their rates pursuant to the rule. These filings are summarized in Attachment A.

The Commission has suspended 12 of the 15 applications and set each for hearing before an administrative law judge. In addition, one application for CWIP was agreed to by the utility's customers. In another instance, the Commission has notified a utility that its application is deficient and has directed the utility to file more detailed information before the application can be accepted for filing. Two other electric utilities have only recently filed requests for CWIP. The Commission has yet to act upon these two filings.

By setting these cases for hearing, the Commission is requiring the utilities requesting CWIP to prove their case. The utility's wholesale customers and the Commission staff have adequate opportunity to review all factual issues relating to the construction costs in question, including the need for new construction, least-cost alternatives and whether the costs are properly allocated.

The 1983 rule limits wholesale rate increases attributable to CWIP to six percent in each of the first two years following the effective date of the rule. In fact, seven of the fifteen filings to date have been for amounts substantially below the six percent cap.

Under the 1983 rule, electric utilities have requested rate increases of approximately $118 million, or less than one percent of the electric rates regulated by the FERC. Approximately one-half of the $118 million is attributable to a single application.

IV. Conclusion.

The current CWIP rule is designed to encourage least-cost strategies, provide more accurate price signals and help mitigate sudden price increases. It is still too early to say whether the new rule is in fact meeting these goals. What can be said, however, is that rate increases sought to date are substantially less than were estimated a year ago.

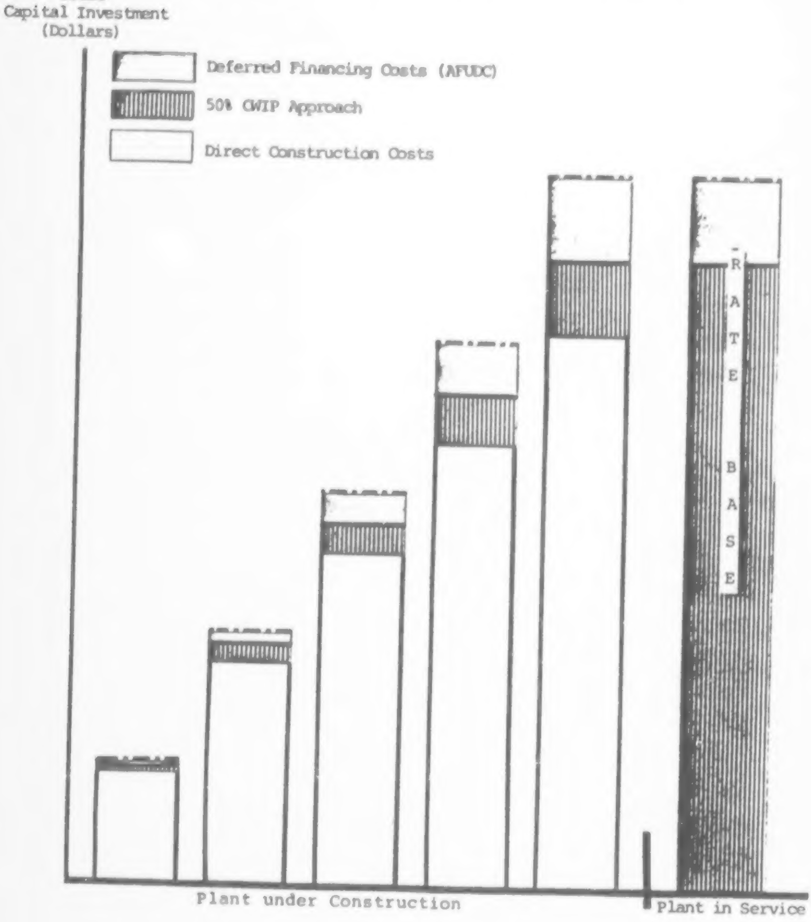
I can assure you that the Commission will continue to monitor closely developments under the rule. Moreover, I am committed to making available to the Congress such information regarding developments under the rule as may be properly requested so that the Congress may have before it a full and complete factual report on the effects of this rule on jurisdictional customers. I would be happy to respond to any questions which you may have.

Thank you very much.

CHART I, IA, IB

PLANT CONSTRUCTION COSTS AND THEIR IMPACT ON RATE BASE

(USING AFUDC APPROACH VERSUS 50% CWIP APPROACH)



IMPACT ON UTILITY REVENUE REQUIREMENTS OF DEFERRING THE FINANCING COSTS OF A NEW PLANT
(AFUDC VERSUS 50% CWIP APPROACHES)

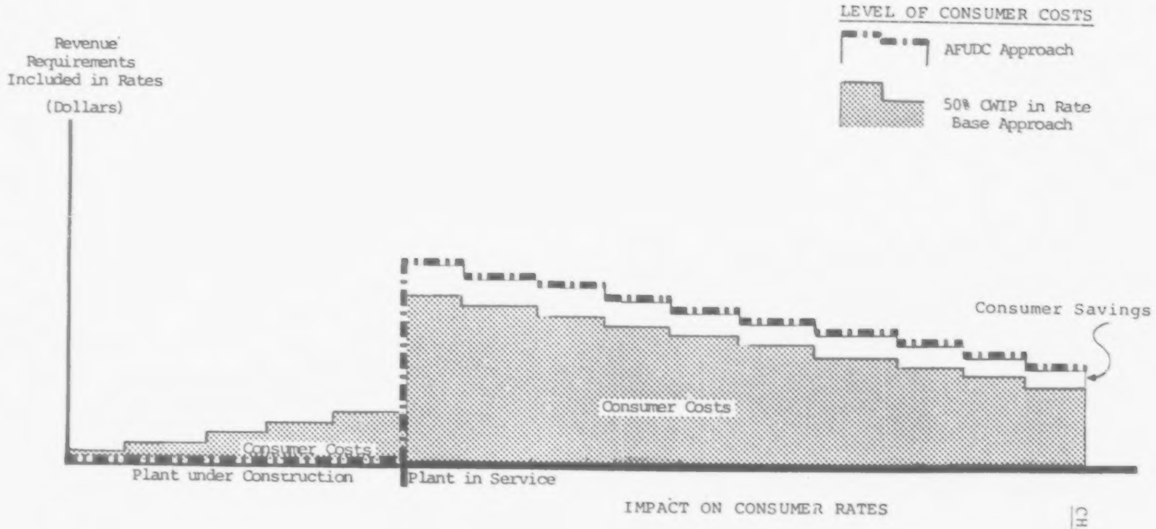
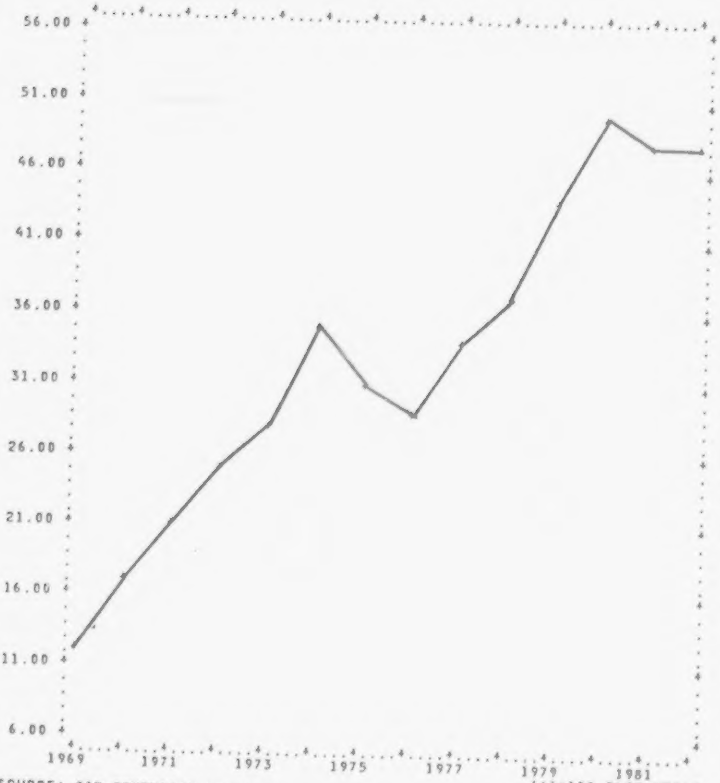


CHART II, IIA

CHART III

NON-CASH AFUDC AS A PERCENTAGE
OF TOTAL UTILITY INCOME



SOURCE: S&P COMPUSTAT SERVICES

(+)=100 ELEC UTILS
03/27/84

Company	Docket No.	Commission Action	Order 298 $ Impact	Order 298 % Impact	Price Squeeze Alleged
Southwestern Elec.	ER83-609	Suspended	$ 121,000	5.95%	YES
VEPCO	ER83-618	Suspended	9,161,000	3.8%	YES
Kansas G & E Company	ER83-628	Suspended	1,865,224	6.0%	YES
NEPCO	ER83-647	Suspended	50,926,000	6.0%	NO
Niagara Mo. Pwr. Corp.	ER83-652	Suspended 1/	410,000	6.5% 1/	NO
Wisconsin P.S. Corp.	ER83-655	Suspended	406,000	0.8%	YES
Kentucky Util. Co.	ER83-656	Suspended 2/	3,383,120	4.9%	YES
West Texas Util. Co.	ER83-694	Suspended	1,969,331	2.9%	YES
Carol. Pwr & Lt Co.	ER83-765	Suspended	11,979,707	6.0%	YES
Montaup Elec. Co.	ER84-55	Suspended	11,300,000	6.0%	NO
So. Calif. Ed. Co.	ER84-75	Suspended	10,552,000	4.72%	YES
Canal Elec. Co.	ER84-74	Suspended	14,251,487	N/A 3/	NO
Ill. Power Co.	ER84-184	Uncontested Rate 4/	593,914	5.68%	NO
El Paso Elec. Co.	ER84-236	Pending Action Agenda of 4/11/84	361,965	3.4%	YES
Miss. Pwr. & Lt. Co.	ER84-276	Pending Action 5/	473,000	2.8%	YES

1/ The Commission disallowed inclusion of CWIP in rate base in excess of the 6 percent rate impact limitation in Order No. 298. The elimination of the excess CWIP shall be reflected in the compliance rates at the conclusion of the proceeding.

2/ The Commission disallowed inclusion of CWIP in rate base in excess of the 50 percent of CWIP limitation in Order No. 298.

3/ This filing is a new service rate. The 6 percent rate impact limitation under Order 298 is not applicable.

4/ Neither the wholesale customers nor the Commission's staff disputed this rate filing and the rates were made effective.

5/ Deficiency Letter sent out 3/13/84. The Commission will not consider this rate application until the utility has full complied with the filing requirements under Order No. 298.

Attachment A

Senator **Murkowski**. Thank you very much, Chairman O'Connor.

Our next witness is the Honorable Jan Mares, Assistant Secretary for Policy, Safety and Environment, Department of Energy.

Please proceed, Mr. Mares.

STATEMENT OF HON. JAN W. MARES, ASSISTANT SECRETARY, POLICY, SAFETY, AND ENVIRONMENT, DEPARTMENT OF ENERGY

Mr. **Mares**. Thank you, Mr. Chairman, Senator Chafee.

The Department opposes the passage of these bills. We're concerned that the passage of any of these bills would be harmful to the consumers by making electricity less reliable and, in the long run, more expensive.

We support the recent ruling by the Federal Energy Regulatory Commission on this subject. And I would commend to everybody reading of their opinion. It's long, but it is a very carefully written, balanced opinion, based upon extensive hearings and submissions.

We note with regret that that carefully considered and unanimous decision would be essentially nullified by any of the bills under consideration here today.

The Department's position on this legislation is based firmly and clearly upon the administration's national energy policy plan; the principal goal of which is to foster an adequate supply of energy at reasonable costs.

The recent CWIP rule issued by FERC is a regulatory change which clearly responds to the changed economic environment of the utility industry, and encourages the capital investment needed to provide the Nation and its customers, all of us, an adequate supply of energy at reasonable cost.

FERC is the appropriate Federal body to provide such a response, because it has extensive experience with utility regulations, and because it systematically considered the views, problems, needs of all the groups affected by these regulations.

Thus, the Commission can, and, in fact, has crafted a prudent, effective and balanced response to industry and consumer problems.

The FERC approach will reduce some financial limitations which utilities previously experienced when trying to build needed capacity, and it will provide for greater rate stability for consumers by avoiding or minimizing the sudden rate increases which would otherwise occur when a large generating plant comes into service.

There has been some reference in testimony elsewhere about a price squeeze. There does not appear to be any general connection between CWIP and price squeeze; although, it could arise in particular circumstances.

Accordingly, we support the provisions in the FERC rule which allow for case-by-case consideration of price squeeze or undue price discrimination.

If such abuses can be substantiated, FERC retains the ability to exclude CWIP in rate base in particular cases.

By perpetuating disincentives to necessary capital investment, these subject bills would serve to increase consumer costs in the long run, and potentially increase oil imports on a noneconomic basis.

It appears from work which we have supported—which I'm going to enter into the record momentarily—that rate suppressive regulation can, indeed, raise electricity rates higher than they otherwise would be in a net present-value sense which, in turn, will threaten the integrity of our long-term supply.

In the support of that, there was a study that was done for the Department entitled "Long-Term Consumer Impacts of Electricity Rate Regulatory Policies" done in January 1983, which I would like to submit for the record, Mr. Chairman.

I will close my summary by quoting the final paragraph of the letter of Secretary Hodel, which is dated February 6, 1984, which we sent to all Members of the House of Representatives just before the House passed H.R. 555. I would like to submit the full letter for the record and read the final paragraph.

Electricity is a fundamental requirement for long-term economic growth. We cannot afford legislation which unnecessarily preempts the considered decisions of our regulatory institutions and casts a shadow over the adequacy and efficiency of our Nation's electricity supplies. For this reason, I urge you to vote against H.R. 555 and allow the recent FERC rulemaking to stand.

I thank you, Mr. Chairman, and would be happy to answer any questions.

[The prepared statement and material submitted for the record by Mr. Mares follow:]

STATEMENT
OF
JAN W. MARES
ASSISTANT SECRETARY FOR
POLICY, SAFETY AND ENVIRONMENT

BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
COMMITTEE ON ENERGY AND NATURAL RESOURCES
U. S. SENATE

APRIL 12, 1984

Good morning, Mr. Chairman and Members of the Subcommittee. I am very pleased to have the opportunity this morning to present the Department of Energy's views on S. 817, S. 1069, and H.R. 555, which pertain to the inclusion of Construction Work in Progress (CWIP) in the rate base of public utilities.

The Department opposes the passage of these bills. We are concerned that passage of any of these bills would be harmful to consumers by making electricity less reliable and in the long run, more expensive. We support the recent rulemaking by the Federal Energy Regulatory Commission (FERC) on this subject, and note with regret that the Commission's carefully considered and unanimous decision would be essentially nullified by any of the bills under consideration here today.

The Department's position on this legislation is based firmly and clearly upon the Administration's national energy policy, the principal goal of which is to foster an adequate supply of energy at reasonable costs. The Administration seeks to promote economic efficiency through actions and policies which will give appropriate price signals to all and lead to an appropriately balanced and mixed energy resource system. To achieve these objectives in the electric utility sector, it is essential that the industry have both the financial capability and the incentive to make timely investments in order to assure reliable future service at minimum cost.

Sound planning in the electric utility industry involves long lead times, and decisions will be needed soon concerning new generating plants which would become operational in the mid-1990s. In addition to new generating equipment, the industry will need to make appropriate investments in transmission and distribution facilities, conservation programs, new metering systems, etc. The Department believes that there is reason to be concerned today about whether the industry's present regulatory environment facilitates the making of the right investment decisions in a timely manner.

To understand the Department's concern and to see the proposed bills and the FERC's rule in context, it is important to consider some of the fundamental changes which have occurred in the electric utility industry over the past 10-15 years. Before the 1970's, new electric utility powerplant construction could be financed relatively easily. Plant construction lead times were short, interest rates were low, and electricity prices were declining. Construction Work in Progress (CWIP) was a fairly small fraction of total utility assets, so the question of whether to include CWIP in the utility rate base was not an issue.

During the 1970s and 1980s, however, factors such as general inflation, real increases in fuel prices and construction costs, reductions in demand growth rates, as well as environmental concerns, dramatically changed the industry's traditional operating environment. As a result the industry has experienced difficulty generating sufficient funds to meet increasing operating and construction costs, as well as providing a market-competitive rate of return to investors. Consequently, the industry has less incentive than previously to make additional investments, even if those investments would help to maintain reliable, low-cost electric service over the long term.

Some argue that the decline in the electric power industry's financial performance was the result of poor management or the recent recession. Neither of these explanations can be supported. In the 1960s the industry was financially strong. Since then the financial condition of virtually every company has declined substantially. To blame this decline on poor management is to suggest that every company in the utility industry (and there are hundreds) simultaneously replaced good management with bad as they moved from the 1960s into the 1970s. This is not plausible. To blame all the current problems on the recession is also insupportable. The decline in financial performance outlined above persisted through the recovery period of 1976 through 1979, as well as the recession years of 1980 through 1982.[1/]

In 1983, bond downgradings for the industry outnumbered upgradings by almost two to one, and interest coverage ratios (on an after-tax cash basis) were essentially unchanged from 1982.[2] Today, with the nation's economic recovery well under way and electricity demand increasing, the industry's average market-to-book ratio is well below unity (0.86).[3]

The problems of the utility industry are endemic to the industry itself and to the way it is regulated. The solutions will, we believe, include changes in regulatory practices to accommodate the changed economic environment in which the industry must function both today and in the future. The recent CWIP rule issued by FERC is a regulatory change which clearly responds to the changed economic environment of the utility industry.

FERC is the appropriate Federal body to provide such a response because it has extensive experience with utility regulations and because it systematically and thoroughly considers the views, problems and needs of all groups affected by the regulations. Thus, the Commission can craft a prudent, effective and balanced response to industry and consumer problems. Furthermore, the Commmission can revise its regulations to provide the appropriate response as circumstances change in the industry.

In response to the current circumstances in the industry, the FERC rule provides even-handed treatment for all electric utilities under its jurisdiction, and it provides limited regulatory relief for those utilities before they get into financial trouble. The approach is relatively easy for FERC to administer, and the relief provided is timely. Under the rule, electric utilities can seek to include in their rate bases up to 50% of the costs of Construction Work in Progress; the Commissioners decided to limit any rate increases resulting from CWIP to no more than 6% per year for the first two years. In addition, FERC will continue to determine whether such costs are prudent. This approach will reduce some financial limitations which utilities previously experienced when trying to build needed capacity, and it will provide for greater rate stability by avoiding or minimizing the sudden rate increases which would otherwise occur when a large generating plant comes into service.

Of the bills under consideration here today, S. 817 is the most objectionable, because it is the most extreme; it would block the FERC from including any CWIP in rate base except those items related to the construction of pollution control facilities or the conversion of oil or gas-fired facilities to other fuels.

H.R. 555 is somewhat less objectionable, in that it would allow the FERC to include up to 40% of CWIP in rate base, but only after a cumbersome regulatory process which would be particularly burdensome for applicant utilities. S. 1069 would establish an elaborate procedure much the same as that in H.R. 555, but it would not put a percentage limit on the amount of CWIP which the FERC could put into the rate base.

The Department opposes the procedures which H.R. 555 and S. 1069 would establish for four reasons:

1. These bills would prohibit a generic response which is needed to address industry-wide problems. Instead, they would provide a limited response to a few companies facing extraordinary financial difficulties. They presume that including CWIP in the rate base is an inappropriate regulatory mechanism except in extraordinary circumstances. Such a presumption may have been appropriate in the 1960s when there were adequate financial incentives for utilities to pursue necessary capital investment. As indicated above, however, these circumstances no longer exist. The major challenge for electric power rate regulation in the 1980s will be to provide an environment which does not inhibit desirable investments while regulating a basic commodity which is experiencing nominal cost increases. FERC in its recent rulemaking responds to this challenge. By dealing effectively with one aspect of

negative investment incentives, FERC is revising rate regulation to permit investments that will enhance the long term sufficiency and efficiency of electric power.

2. These bills would create an unnecessarily cumbersome regulatory scheme. In order to qualify for CWIP, a utility would have to expose itself to a complex evidentiary hearing procedure culminating in a set of findings by the FERC pertaining to alternative supply plans and their related costs. We do not believe that such complicated regulatory schemes will do anything but create more obstacles for utility companies and expand the growing set of disincentives to new capital investment. The recent FERC rulemaking avoids this intricate regulatory second-guessing of utility management decisions.

3. These bills would create the perception that CWIP is a last-minute bail-out mechanism, since it only provides remedies to financially troubled utilities. Companies that get into serious financial trouble could temporarily shift part of their cost burden to consumers to shore up their financial position. This approach may add to the existing disincentives since to avoid being labeled "financially troubled", companies could choose to forego capacity additions or other cost-reducing programs that might be necessary to minimize consumers' costs and assure reliable supply in the long term. The FERC

rulemaking avoids the perception that CWIP is a bail-out mechanism, and instead presents CWIP as an across-the-board regulatory reform measure that offers greater stability in consumer rates and utility financial condition.

4. By perpetuating disincentives to necessary capital investment, these bills would serve to increase consumer costs in the long run and potentially increase oil imports on a non-economic basis. They would do so even though, in several regions, investments in new coal, lignite and nuclear facilities would reduce the use of high cost oil and gas-fired facilities and thereby reduce consumer costs over time. The FERC approach would reduce disincentives to investment and would, therefore, provide long-term consumer benefits.

I will close by quoting the final paragraph of the Secretary of Energy's letter to all members of the House of Representatives on February 6, 1984, just before the House passed H.R. 555:

> Electricity is a fundamental requirement for long term economic growth. We can not afford legislation which unnecessarily preempts the considered decisions of our regulatory institutions and casts a shadow over the adequacy and efficiency of our nation's electricity supplies. For this reason I urge you to vote against H.R. 555 and allow the recent FERC rulemaking to stand.

That concludes my statement, Mr. Chairman. I will be happy to respond to questions from you or other Members of the Subcommittee.

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[1] U.S. Department of Energy, The Future of Electric Power in America: Economic Supply for Economic Growth, June 1983. Also see Booz, Allen and Hamilton, Inc., The Financial Health of the Electric Utility Industry (October 1982).

[2] Standard & Poor's Corporation, Utilities - Electric (Industry Survey), March 1, 1984.

[3] Argus Research Corporation, Argus Utility Scope, Weekly Summary, March 30, 1984. Argus provides statistics for the 50 largest investor-owned electric utilities. Lilco, owner and prospective operator of the financially troubled Shoreham plant, is no longer included in industry market/book averages.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: C. M. Butler III, Chairman;
Georgiana Sheldon, J. David Hughes,
A. G. Sousa and Oliver G. Richard III.

Construction Work in Progress)   Docket No. RM81-38
for Public Utilities)

ORDER NO. 298

FINAL RULE

(Issued May 16, 1983)

INTRODUCTION

The Federal Energy Regulatory Commission (Commission) is amending its regulations that govern the inclusion of construction work in progress (CWIP) in the rate base of public utilities. The new rule replaces present CWIP policy, codified in 18 C.F.R. § 2.16, with a new § 35.26 which provides that any public utility engaged in the sale of electric power for resale may file to include in rate base up to 50 percent of CWIP, subject to a rate impact limitation in the first two years, and all CWIP associated with pollution control and fuel conversion facilities. The CWIP costs affected by the rule are those costs that are allocable to electric power sales for resale.

Under the new rule, utilities are eligible to file to include as CWIP in rate base the investment in construction projects and certain costs of nuclear fuel in process of refinement, conversion, enrichment, and fabrication. The rule allows filing for CWIP in rate base irrespective of the financial condition of the utility. The Commission also amends the requirements of certain cost of service statements in § 35.13 in order to obtain information about construction programs pertinent to the utility's rate change filings. Under these filing requirements, requests for inclusion of CWIP in rate base will assist the Commission in evaluating the prudence of the claimed costs, including the element of the extent to which the investment is part of a least-cost power supply strategy.

I. BACKGROUND

A regulated utility is entitled to an opportunity to recover its costs plus a reasonable return on investment. Among its costs is the cost of financing the construction of new facilities for the generation and transmission of electric power. This cost includes debt interest and a reasonable equity return on the capital investtment used to finance construction. There are two mutually exclusive ratemaking methodologies by which these so-called "carrying charges" on construction capital are recovered in rates.

One method capitalizes the carrying charges incurred during the construction period as allowance for funds used during construction (AFUDC). 1/ AFUDC is recorded in part as current income to the utility and in part as an offset to interest expenses, but no cash payments are made by ratepayers during

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1/ Commission Order Nos. 561 and 561-A govern the manner in which carrying charges are computed and added to the costs of plant under the AFUDC method (issued February 2, 1977 and August 1, 1977, respectively), 42 Fed. Reg. 9,161 (1977) and 42 Fed. Reg. 9,661 (1977), respectively.

construction. Payments from ratepayers to recover the carrying charges begin when the completed plant goes into operation. The cost of the completed plant at that time includes all carrying charges recorded during the construction period, as well as the direct costs of land, labor and construction materials. 2/ The entire cost of the plant (including AFUDC) is added to rate base, and it earns a rate of return on investment and is depreciated over the life of that plant.

The second method for recovering carrying charges incurred during the construction period is to include CWIP in rate base. (CWIP includes accrued AFUDC on investment not in rate base.) The utility thereby recovers its carrying charges currently from ratepayers through the return component of its rates, rather than adding them to the cost of construction for recovery when the plant is in service. The return on CWIP is recorded as income on a current basis (like AFUDC), and actual cash payments are made by the ratepayers currently (unlike AFUDC).

Each method is intended to assure the utility of an opportunity to recover from its ratepayers the carrying charges associated with construction investment. The two methods of recovery differ primarily according to when the investment is permitted in rate base, i.e., when the carrying charges are reflected in the cost of service and thus in rates charged to

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2/ See Uniform System of Accounts Prescribed for Public Utilities and Licensees Subject to the Provisions of the Federal Power Act (Class A and Class B), Electric Plant Instructions, 18 C.F.R. Part 101 (1980).

ratepayers. The courts generally defer to the administrative agency's choice of methods. 3/

This final rule responds to widespread concern over the need for adequate financing of the Nation's planned electricity generation capacity. With respect to both the nature of the problem and the appropriate regulatory response, the debate has been conducted over the last few years in the Congress, 4/ the state regulatory commissions, 5/ proceedings before the Commission, 6/ and among the commentators. 7/ Although the

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3/ Goodman v. Public Service Commission, 497 F.2d 661, 666 (D.C. Cir. 1974).

4/ *See, e.g.*, *Hearings on Financial Condition of Utilities and Their Future in the 1980's before the Subcommittee on Energy Conservation and Power* of the House Committee on Energy and Commerce, 97th Cong., 1st Session (April 6, 1981).

5/ For example, a special committee of the National Association of Regulatory Utility Commissioners held a public hearing on the financial health of the electric utility industry in October of 1981.

6/ FPC Order No. 555, *Order Adopting in Part Construction Work in Progress Rulemaking and Terminating Proceedings*, 41 Fed. Reg. 51,392 (1976), *reh. denied*, Order No. 555-A, 42 Fed. Reg. 3022 (1977), *aff'd sub nom. without opinion*, Oglethorpe Electric Membership Corp. v. FERC, 574 F.2d 63 (D.C. Cir. 1978) (rulemaking adopting existing § 2.16 allowing CWIP for pollution control and fuel conversion facilities and establishing criteria allowing consideration of CWIP in certain instances where utility is experiencing "severe financial difficulty").

7/ *See, e.g.*, Electricity Consumers Resource Council, "Profiles In Electricity Issues: Should CWIP be Included in an Electric Utility's Rate Base?" (July 1981); U. S. General Accounting Office, "Construction Work in Progress Issue Needs Improved Regulatory Response for Utilities and Consumers," Report by the Comptroller General of the United States (EMD-80-75) (June 23, 1980). Copies of these documents, as well as 24 other articles, reports or expert testimony in state utility proceedings, were placed in the public record of this rulemaking in November of 1981, 46 Fed. Reg. 55,535 (November 10, 1981).

Commission regulates only a portion of electric power sales nationally, it has been actively engaged in a reexamination of ways in which it might ensure the future reliability of the electric power systems, avert the future imposition of unnecessarily high rates and encourage fuel-efficient generating capacity.

On March 6, 1981, the Commission convened an Informal Public Conference on the Financial Condition of the Electric Power Industry. 8/ The conference was held in response to widespread concern among both federal and state regulatory bodies as to the deterioriating financial condition of the Nation's electric utilities. Sitting with members of a number of state regulatory commissions, this Commission heard voluminous testimony regarding the financial condition of the electric utility industry. Some of the comments at the conference evaluated the Commission's experience under the existing policy that permitted the inclusion of CWIP in rate base in only very limited cases. On the basis of that public conference, as well as on information available in reviewing the regular rate filings of jurisdictional utilities, the Commission commenced the present proceeding to revise the existing rules.

8/ See Transcript of Informal Public Conference on the Financial Condition of the Electric Power Industry, Docket No. EL81-7-000 (March 6, 1981) (hereinafter cited as Public Conference).

The Notice of Proposed Rulemaking (NOPR) in this proceeding was issued on July 27, 1981. 9/ The NOPR summarized relevant data on the financial condition of the electric utility industry and the need for utilities to acquire capital at reasonable costs. In addition, the NOPR discussed possible effects that the inclusion of CWIP in rate base might have on the actual costs to utilities of obtaining capital. While much of the NOPR was focused on a proposal to provide specific criteria a formula concerning the amount of CWIP that would be includable in rate base, the Commission stressed that it was actively considering several ways of treating construction-related costs in rates, as well as non-rate-related solutions to financing new plant construction. The Commission requested comment on all alternatives.

One of these alternatives specifically set forth in the NOPR was to allow a fixed percentage of CWIP in rate base regardless of a utility's financial condition. As stated in the NOPR: 10/

9/ Notice of Proposed Rulemaking, Construction Work in Progress for Public Utilities, Docket No. RM81-38, 46 Fed. Reg. 39,445 (August 3, 1981). In response to the NOPR, the Commission received hundreds of initial and reply comments over a six-month period. As an additional means of exploring the issues and receiving comment from interested persons, the Commission, on December 7-8, 1981, heard oral presentations from some 25 representatives of various interest groups.

10/ 46 Fed. Reg. 39,452.

> This alternative has the advantage of eliminating controversy over the appropriate standard for determining financial difficulty. However, it would require the Commission to depart significantly from its present policy by permitting CWIP in the rate base of utilities regardless of their financial health.

This is the proposal which the Commission adopts.

II. THE DEBATE IN A NUTSHELL

Two sharply divergent views of the electric utility industry emerged from the comments. According to privately-owned utility companies, the industry has been (and remains) in difficult financial straits which raise serious questions as to the industry's ability to finance today the construction of electrical generation capacity which will be needed later this decade and beyond. Under this view, utilities' inability to earn their allowed rate of return [11] reduces current cash flow, tending to increase the need for additional external financing. This tends in turn to increase risk and thereby to increase the actual cost of capital. These factors then tend to jeopardize the industry's ability to finance the major new facilities which the industry projects are needed to replace inefficient existing facilities and to satisfy increased consumer demands later this decade. These financial constraints are said to have caused the cancellation and deferral of substantial new capacity over the past few years. Financial concerns also have tended to bias the industry's investment in favor of smaller facilities which may require less construction capital (and thus are easier to finance) but which are more costly to consumers in the long run because of higher fuel and maintenance costs.

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[11] Many commenters refer to this inability as "earnings attrition." Academically more precise definitions of attrition might not include all reasons for earning shortfalls but only those stemming from increases in costs outpacing increased revenues.

Thus the utility industry's comments, by and large, tend to view an increase in the inclusion of CWIP in rate base primarily as a partial answer to these financing difficulties. These comments deal extensively with the effect of CWIP in rate base on utility cash flow and the cost of capital. And they strongly recommend that we allow all utilities to include 100 percent of CWIP in rate base.

The utilities' wholesale power customers present a different view. While generally recognizing that the utility industry has faced financial difficulties over the last few years, these commenters contend that the situation has brightened considerably during the pendency of this proceeding as state regulatory commissions have increasingly recognized the need for higher rates. 12/ Moreover, they claim that the extensive cancellations and deferrals of new capacity reflect a belated recognition of sharply reduced growth in electricity demand,

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12/ According to one recent estimate in a trade journal, some $8 billion in rate increases were granted during 1981 and some $6 billion in increases were anticipated in 1982. Foley, "Electric Utility Financing -- Let's Ease Off The Panic Button," Pub. Util. Fortnightly (January 6, 1983) at 27.

not the utilities' inability to obtain adequate financing. The customers thus oppose the inclusion of CWIP in rate base as an unnecessary and unduly costly answer to yesterday's problem. They recommend strongly against inclusion of any CWIP in rate base.

We take an intermediate position. While the industry's financial picture has improved over the last year, difficulties remain. Moreover, as we have reviewed the comments, we have come to better appreciate the effects of the current regulatory approach to dealing with construction work in progress.

As detailed below, the present approach does add to financing difficulties and, therefore, tends to artificially reduce the supply of capital devoted to new capacity construction. But we agree with the customers that plant cancellations also (and perhaps even primarily) reflect recognition of reduced demand projections.

The present regulatory approach tends to separate the supply side of the question (including the incentives for increased capital investment) from the demand side (including the utilities' planning for new capacity to meet that demand). Put another way, due to the long lead times for planning and constructing new capacity, consumption trends reflect present costs rather than the higher costs of the new capacity which will be required to satisfy that demand as projected into the future. But at the higher prices resulting from additional capacity, demand will tend to be less. Accordingly, demand projections have consistently tended to overstate actual demand over the last decade. 13/

In an unregulated and freely competitive world, price movements would occur to ensure rough equilibrium in supply and demand in the aggregate. Utilities are regulated, of course, due to their historic position as natural monopolists. The regulator thus has the obligation to try to achieve through regulatory tools the rough supply/demand balance which translates into adequate and reliable electric service at the lowest reasonable cost.

The comments in this proceeding demonstrate that the present approach fails this test. According to utilities, the present approach is inadequate because it tends to jeopardize adequate financing for needed facilities. This is to say that it fails the capital attraction test 14/ in that it fails to provide for supply of adequate capital. This is the thrust of much of the comment concerning adequacy of cash flow, low bond ratings, and the increased cost of capital. Customers, on the other hand, attribute current difficulties to reductions in demand forecasts. Yet these overstated demand projections are, to some degree, a natural consequence of a regulatory scheme

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13/ *See generally* U. S. Department of Energy, Initial Comments.

14/ Bluefield Waterworks and Improvement Company v. Public Service Commission, 262 U.S. 679 (1923).

which effectively conceals from consumers the high costs of new service until after those costs have already been incurred. Then, when customers have adjusted electricity consumption decisions to the higher prices, it begins to appear -- too late -- that too much supply has been made available.

In one sense, it is not possible for the utility and the customer commenters both to be right in their assessements: if supply is inadequate to meet demand, it is not possible at the same time for demand to greatly exceed supply.

But, in a more important sense, both sets of commenters are correct in that the status quo tends to send disparate price signals to suppliers of capital for electricity generation and consumers of that electricity. In this sense, the detailed debate in the comments as to CWIP's effect on cash flow, cost of capital, demand forecasting and related matters can be interpreted as part of this broader analysis.

Today's rule attempts to strike a balance between the competing views and takes a modest step at tying supply and demand together in a somewhat clearer fashion.

The purpose of the rule is thus threefold:

- to mitigate any bias which may discourage additional capital investment in needed facilities;
- to enable the need for those facilities to be more accurately evaluated by price signals which reflect

today some of the costs associated with future facilities; and

- to mitigate the sudden price increases which tend to result under an AFUDC policy thereby furthering the goal of rate stability.

The remainder of this preamble expands upon these purposes and discusses the comments received in light of the analysis.

III. BASIS FOR THE RULE

Many of the issues coming before this Commission concern the balance between the interests of investors in the utilities that we regulate and the interests of those utilities' customers. The stakes in the issue of CWIP are different. The CWIP issue is for the most part not concerned with potential shifts in wealth between investors and consumers. If utility regulation functioned as it should -- in particular, if electric utilities were able to earn returns equal to their cost of capital -- the CWIP issue would not be concerned with such shifts at all. Even within the present context of imperfect utility regulation, the CWIP issue is principally concerned with time: for the company, a choice between cash receipts today and larger cash receipts in the future; for the company's customers, a choice between paying higher prices now and paying even higher ones tomorrow.

A. The Utility's Perspective: Tax Credits and Attrition

Debt interest and a reasonable equity return on the capital investment during construction are part of the cost of a utility plant. In one way or another, the utility must be given the opportunity to recover them. If investment in construction work is included in rate base, the utility recovers them through a current cash return just as it recovers the capital costs of facilities that are already providing service; if CWIP is not included in rate base, the carrying charges are capitalized as allowance for funds used during construction (AFUDC). AFUDC is recorded in part as current income to the utility and in part as an offset to interest expenses, but no cash payments are made by ratepayers during construction. Payments from ratepayers to cover the carrying charges begin when the completed plant goes into operation. Both the direct cost of the plant and the capitalized AFUDC are then added to rate base, earn a return, and are depreciated over the life of the plant. Because the investment is considered to include the capitalized AFUDC as well as the direct cost of the plant, the utilities' revenues and the customers' electric bills are higher than they would be if CWIP had been included in rate base.

If allowed returns were always set equal to the cost of capital and if the allowed returns were always expected to be earned, a utility would be indifferent as to whether CWIP was included in rate base. Its exclusion would mean delay in receiving a cash return on the utility's investment, but that delay would be compensated by a return equal to the utility's cost of capital. Such a return would, by definition, fully compensate the utility for the delay and any associated incremental risk. To the extent that additional cash was needed, investors would willingly lend it on the strength of AFUDC's implicit promise of future cash revenues.

As explained below, utilities clearly are not in fact indifferent on the CWIP issue. If there had been any doubt on that score, the record in this rulemaking would remove it. Fifty-nine investor-owned utilities or utility groups submitted comments. Without exception, their comments favor the inclusion of CWIP in rate base. The same position was taken by the Edison Electric Institute and by the investment and accounting firms that assist the industry in raising the required capital.

These comments accurately portray the interests of the investor-owned utilities. Whatever might be the case in a different world, in this one, utilities would gain from the inclusion of CWIP in rate base. That gain has at least two sources. One is the interaction of CWIP policy with the federal income tax law. Under current Commission policy, the benefits of investment tax credits are shared between utility investors and ratepayers. The amount of the tax credit, and therefore the benefit to utility investors, is based only on the direct cost of plant; it does not include capitalized AFUDC. 15/ Exclusion of CWIP from rate base under the AFUDC alternative thus dilutes the investment tax credit benefit: that alternative increases the required investment, which must finance the carrying charges as well as the direct cost of the plant, but it does not increase the associated tax credit. Inclusion of CWIP in rate base eliminates this dilution, increasing the effective rate of return on new investment. 16/

The second source of gain to utilities from including CWIP in rate base derives from their current inability to earn a return equal to their cost of capital. Since about 1974, utilities have not realized returns at levels approximating their cost of capital. Assuming allowed rates of return on common equity approximate costs of common equity, by one estimate the authorized return on common equity to electric utilities averaged 13.2 percent for the period 1972 to 1980, while earned

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15/ To be more precise, it never includes the capitalized equity return portion of AFUDC. It may, however, include the interest portion of AFUDC if utilities choose to capitalize rather than expense this cost for tax purposes.

16/ See Environmental Assessment Related to Proposed FERC Rule Amendment Regarding Inclusion of CWIP in Rate Base Section 4.2.2.1 (1983) (hereinafter cited as Environmental Assessment). (Empirical results presented indicate that over time, the earned return on common equity with CWIP in rate base would rise slightly above the earned return without CWIP in rate base.)

rates of return averaged 11.5 percent for the same period. [17] Another indication of this disparity is utilities' market-to-book ratio which averaged 0.84 during the 1972-1980 period. [18]

A company's cost of capital constitutes by definition its indifference point; it is the level of return at which utility shareholders will neither gain nor lose from a new investment. By the same token, if a company earns less than its cost of capital, any additional investment constitutes a loss for its shareholders; they are poorer if the investment is made than if it is not.

Inclusion of CWIP in rate base reduces a utility's investment. Without CWIP, the company must invest not only in the direct cost of the facility but also in the carrying charges on that investment during the construction period. Inclusion of CWIP eliminates the latter investment and thus reduces the loss to the company's shareholders. So long as the company earns less than its cost of capital, the loss cannot be wholly avoided; under those conditions any investment at all, even one limited to the direct cost of the facility, leaves investors worse off than they would be if no investments were made. But the loss is smaller than it would be if CWIP were excluded from rate base.

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[17] Appalachian Power Co., *et al.*, Initial Comments at Figure 4 (the gap between authorized and earned rates of return averaged 1.7 percent for this period). During 1982 this trend appears to have continued. The gap between the earned rate of return on common equity and the allowed return on equity may have widened to 2.0 percentage points (15.8 percent allowed vs. 13.8 percent earned). *See* Argus Research Corp., *Returned and Amounts Authorized (January-December 1982)* (January 11, 1983).

[18] Appalachian Power Co., *et al.*, Initial Comments, Figure 4. In 1982, the market-to-book ratio of electric utilities averaged 0.8, continuing the trend of a ratio of less than 1.0 over the last decade. *See* Argus Research Corp., *supra*. In recent months, with the surge in the stock market, the market-to-book ratios for electric utilities have improved.

There are other reasons why utilities may favor the inclusion of CWIP in rate base, 19/ but the two just discussed are sufficient to explain the position taken by investor-owned utilities in this proceeding. Inclusion of CWIP will leave the investors better off. It is, however, important to emphasize again the sources of their gain: a tax benefit, and the reduction (but not elimination) of the loss resulting from investment in new facilities.

B. The Ratepayer's Perspective: Present and Future Electric Rates

For consumers as a group, inclusion of CWIP in rate base for any particular construction project or program raises current electric bills and lowers future ones. From this standpoint, the inclusion of CWIP has been analyzed as an investment: the return on the increase in current bills is the reduction in those paid in the future. If inclusion of CWIP resulted in no efficiency gains, the return would equal the utility's allowed rate of return; if, as we think likely, its inclusion resulted

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19/ As discussed below, inclusion of CWIP also improves cash flow and reduces the price increase when a new plant comes on line. Both the improved cash flow and the smoother price path are likely to assist utilities in assessing the demand for electricity, and this is likely to benefit utility investors as well as ratepayers.

in the more efficient planning for the generation of electricity, the return would be higher. 20/

20/ In addition to promoting efficiency, it appears that including CWIP in rate base would also reduce utilities' financing costs. This can happen in several ways. First, it may reduce the risk borne by shareholders with respect to noncompletion or abandonment of plant. Under the Commission's policy on failed or abandoned projects, however, inclusion of CWIP should have relatively little effect on this risk. (See New England Power Co., Opinion No. 49, 8 FERC ¶ 61,054 (July 19, 1979), aff'd sub nom. NEPCO Municipal Rate Comm. v. FERC, 668 F.2d 1327 (D.C. Cir. 1981), cert. denied, 102 S.Ct. 2928 (1982)). Without CWIP, investors would bear a fraction of the direct cost of the failed project plus a fraction of any associated capitalized AFUDC; inclusion of CWIP would affect only the latter. Further, a reduction in this risk of failure may be achieved principally by shifting that risk from investors to ratepayers, and any resulting saving in capital costs is therefore a mixed blessing from the latter's standpoint.

Second, it may reduce the risk that a utility will default on interest payments or be unable to maintain dividends. This reduction in the risk of default does not appear to involve a shift in risk from investors to ratepayers, or at least it does not do so in any obvious way.

Third, by increasing cash flow, including CWIP in rate base may give utilities increased flexibility in their financing so as to make them better able to weather periods of high interest rates and minimize the stockholder losses arising from issuing common stock at prices below book value. Since inclusion of CWIP is likely to generate significant increases in cash flow (see Environmental Assessment, Section 4.2.2.1), this increased flexibility in financing may be an important source of savings in financial costs to utilities, even if there is no reduction in risk or in the marginal cost of capital.

[Footnote continued on next page.]

To assess the wealth impact on consumers as a group of including CWIP in rate base (again relative to a specific construction project or program), it is necessary to compare the return to consumers with an appropriate discount rate. The range of plausible discount rates for consumers is wide. At the lower end, it might be set equal to the return on investments broadly available to consumers of electricity, for example, the return on passbook savings accounts. At the upper end it might be set equal to the interest rate on consumer loans.

The allowed return for utilities averaged about 10 percent over the past decade. 21/ This return probably is higher than the return on investment broadly available to investors during

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20/ [Footnote continued from previous page.]

A final source of cost reduction, though probably only of marginal value, is the effect the CWIP policy may have on credit markets. Because the credit demands of the electric utility industry are large -- one commenter (Appalachian Power Co., *et al.*) stated that the industry accounts for 25-40 percent of total public financing -- and because CWIP in rate base will reduce the external financing needs of the industry, interest rates may fall generally.

The available empirical studies on the cost of capital reduction are not entirely conclusive on this point, because in practice it is not easy empirically to distinguish between (1) the effect of AFUDC and (2) the effect of the construction program itself. *See also* discussion *infra*.

21/ Based on the average capital structure, embedded cost of debt and preferred stock, and allowed rates of return on common equity. That return may be lower in the future if reduced inflation brings lower capital costs, but lower inflation should also tend to reduce the nominal discount rate for consumers.

the period, and probably also somewhat higher than the effective interest rate on mortgage loans, the most important category of consumer loans. 22/ The rate probably is, on the other hand, lower than the effective interest cost on other important categories of consumer loans during that period. 23/

Thus, without assuming any efficiency savings, inclusion of CWIP in rate base appears to be economically equivalent to a reasonable investment. On more plausible assumptions concerning the anticipated efficiency benefits, inclusion of CWIP should be substantially more attractive. Yet the customer groups in this proceeding by and large have opposed the inclusion of CWIP in rate base. Those customers may, like anyone else, mistake their own best interests. It is, however, generally both presumptuous and foolish for a regulatory agency to assume that it knows parties' interests better than the parties themselves.

To understand the position taken by utility customers in this rulemaking, it is necessary to begin with the nature of this Commission's jurisdiction over the electric utility industry.

22/ Mortgage interest costs are tax deductible while, for nonbusiness consumers, the lower future bills resulting from inclusion of CWIP constitute a tax-free return. For those consumers, the proper comparison is thus between the full allowed return to the utility and the after-tax cost of mortgages and other loans.

23/ Bureau of the Census, U. S. Department of Commerce, Statistical Abstract of the United States at 541 (1980) (for example, the average interest rate on consumer credit cards for 1972-1980 was approximately 17.1 percent).

Our jurisdiction is essentially a wholesale one. The Commission regulates sales of electricity for resale; regulation of sales to end users is left to the states.

The electric utility industry is for the most part vertically integrated. Electricity usually is generated, transmitted, and distributed by a single company. The first sale thus is to the end user, and since that is not a sale for resale, it does not fall within this Commission's jurisdiction.

The transactions involving electricity that this Commission does regulate are generally of two kinds, typically with two quite different kinds of purchasers. One kind of transaction consists of so-called coordination sales. These sales take advantage of temporary differences in cost or supply among electric utilities. Measured by the amount of energy involved, such sales constitute approximately two-thirds of electricity sold or exchanged that is under our jurisdiction. Any change in our CWIP policy would have little or no impact on the selling prices of coordination transactions. 24/

24/ Coordination sales may include a demand or reservation charge. Typically, that charge is keyed to the capital costs of one or more generating units operating on the seller's system. If CWIP is allowed in the rate base, the demand charge when the units are operating may be lower because it will not include a capitalized AFUDC component. Inclusion of CWIP will have no impact on the many other coordination sales that do not include a demand charge in the selling price.

The second kind of transaction consists of purchases by electric utilities that regularly depend on other utilities for part or all of the electricity that they distribute to their customers. Such sales are usually referred to as requirements sales. Buyers in these partial or full requirements sales are generally cooperatives or municipal utilities that either lack generating facilities or whose generating facilities are inadequate to meet all of their customers' needs. Requirements sales constitute less than eight percent of all revenues received from sales of electricity by privately-owned electric utilities in this country. 25/ A change in our CWIP policy would affect the time pattern of revenues collected from requirements customers.

Opposition to the inclusion of CWIP in rate base is as uniform among the cooperatives and municipal utilities participating in this rulemaking as is support for its inclusion among the investor-owned utilities. The cooperatives and municipals advance a number of arguments, but in our view the most telling one is that they will in some cases not enjoy the lower future rates that would result from the inclusion of

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25/ Energy Information Administration, Statistics of Privately Owned Electric Utilities in the United States 1977, at 37, 1301-02 (1979). Eight percent represents requirements sales revenues divided by the sum of revenues from sales for resale and revenues from sales to ultimate consumers for the year 1977 which is the latest year for which requirements sales data was completed. The denominator, however, excludes a substantial portion of resale revenues from coordination sales. If these excluded revenues were added to the denominator, the resulting requirements sales percentage would be less than eight percent.

CWIP today. 26/ Although these cooperatives and municipals are not now self-sufficient, in many cases they plan to construct generating facilities that will reduce or eliminate purchases from other utilities. A policy of including CWIP in rate base thus confronts them with the prospect of paying for generating capacity twice: once from the inclusion of CWIP in their rates, and again through the cost of their own generating facilities.

This concern over not being able to receive the benefits of current payments is entirely understandable. It is, moreover, supported by the Commission's general policy favoring rates based on cost responsibility. As we said in the tax normalization rulemaking, "all costs should be allocated among customers and over time in a manner that matches the burdens of costs with the benefits received." 27/ With respect to plant under construction, that policy militates in favor of placing the burden of carrying charges on the customers that the plant later serves.

The particular concerns of the cooperatives and municipals are peculiar to parties that generate or may generate electricity themselves. However, an analogous concern has been expressed with respect to the consumers that ultimately use the electricity, and that ultimately are the principal recipients

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26/ See, e.g., American Public Power Association, et al., Initial Comments at 39.

27/ Final Rule, Regulations Implementing Tax Normalization for Certain Items Reflecting Timing Differences in the Recognition of Expenses or Revenues for Ratemaking and Income Tax Purposes, Order No. 144, issued May 6, 1981, 46 Fed. Reg. 26,617-18 (May 14, 1981) (Emphasis added).

of the benefits and burdens of any policy that we adopt here. This concern is that the lower future rates resulting from inclusion of CWIP in rate base will be so long delayed that many present consumers will never receive them.

In order to illustrate the basic principles, the above analysis has focused primarily on the rate effect of CWIP associated with a particular construction project or program. To assess the likely rate impact of a general policy of including 50 percent of CWIP in rate base, one must estimate the size of likely future construction programs. If new construction continues to increase at a sufficient rate over the period studied, then CWIP-based rates may remain higher than AFUDC-based rates for a relatively long time as the lower rates resulting from a particular plant being completed are offset by the cost impact of continuing new construction on other facilities. If new construction slows sufficiently, however, CWIP-based rates will fall below AFUDC-based rates at some point in the future.

The comments do not contain studies which project CWIP-based rates over time. At our request, the Energy Information Administration (EIA) has conducted such a study (which forms part of the Environmental Assessment). As discussed in more detail in Section IV below, under plausible assumptions as to future nationwide construction programs, in some regions the CWIP-based rate would fall below the AFUDC-based rate as early as 1990. However, the national average rates would remain minimally higher than AFUDC-based rates (between one-half and one percent) over the next 12 years. We think that it is unlikely that CWIP-based rates would remain indefinitely above AFUDC-based ones. 28/

28/ This judgment rests on three grounds. First, for methodological reasons the EIA study assumed that inclusion of CWIP would not reduce utilities' cost of capital or result in efficiency savings. As discussed elsewhere, we believe that inclusion of CWIP probably will do both, and if it does, the point at which CWIP-based rates are lower than AFUDC-based rates is brought closer to the present.

Second, even without any such cost savings over the long-term, CWIP-based rates apparently would remain above AFUDC-based rates only if the annual rate of growth in utility construction expenditures exceeded a utility's allowed rate of return. See Livingstone and Sherali, Construction Work in Progress in the Public Utility Rate Base: The Effect of Multiple Projects and Growth, 8 Fin. Mgmt. 1, 42 (1979), attached as App. A of Initial Comments of Oglethorpe Power Corp., et al. The authors of the cited article thought it likely that in fact the growth and expenditures would exceed utility's cost of capital. However, that view appears to have been based on their assumption that demand for electricity would grow at the rate of six percent annually. More realistic current estimates are in the neighborhood of three percent. If this lower estimate of growth is used and utility expenditures are assumed to increase at the same rate as demand for electricity, AFUDC-based rates will eventually be higher than CWIP-based ones provided that the utilities are allowed a real rate of return in excess of three percent.

Finally, CWIP-based rates that were permanently higher than AFUDC ones would imply that CWIP had in fact increased utilities' cost of capital. Since inclusion of CWIP does not increase utility costs, higher rates necessarily mean higher cash returns to shareholders. If CWIP-based rates later fall below AFUDC-based ones, those higher current cash returns are offset by lower future returns, but if CWIP-based rates were to remain permanently higher than AFUDC-based rates, there would be no later offset. But such permanently higher returns could be sustained only if: (1) inclusion of CWIP was perceived as increasing risk to utility investors, or (2) investment markets are incapable of anticipating the obvious interaction of inclusion of CWIP and utility growth. Neither of these hypotheses appears to us to be very plausible.

The point at which CWIP-based rates are lower could be long delayed, however, and on the present record it is not possible to exclude the theoretical possibility that the delay could continue indefinitely.

C. Striking a Balance

The cost responsibility principle is not controlling on all issues, however. Perhaps the most significant departure from that principle in the Commission's existing regulation is the use of an original cost rate base methodology, which places a disproportionate share of the burden of a facility on consumption in the early years of its useful life. 29/ Commentators have argued for the abandonment of original cost in favor of replacement cost or trended original cost, 30/ but original cost

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29/ The dollar value of return and associated taxes received on new plant in rate base is much higher in earlier years than in later years because of the use of straight line depreciation for ratemaking purposes. Other common departures from the principle include rate treatment for inventories, plant held for future use, prepayment of rent, etc., where such expenses are placed in rate base at the time they are incurred.

30/ See, e.g., Anderson & Mead, A Comparison of Original Cost and Trended Original Cost Ratemaking Methods, Energy Journal (forthcoming); Navarro, Peterson, Stauffer, A Critical Comparison of Utility-type Ratemaking Methodologies in Oil Pipeline Regulation, 12 Bell Journal of Economics 392-412 (1981); Streiter, Trending the Rate Base, Pub. Util. Fort., May 13, 1982, at 32-37; Swanson, The Critical Problem of Inflation in Utility Rate Making, Pub. Util. Fort., Jan. 7, 1982, at 29-31; Address by Alfred E. Kahn, Edison Electric Institute, in Phoenix, Ariz. (Jan. 14, 1982).

offers substantial advantages that have so far been deemed by this Commission and by most other regulatory agencies to offset its shortcomings. 31/

Similarly, we have concluded in this rulemaking that the public interest is on balance best served by a departure from the cost responsibility principle with respect to CWIP. 32/ We reach this conclusion because we believe including CWIP will advance three public interest objectives:

(1) mitigation of any bias against the construction of new generating facilities;

(2) providing for electric rates to more accurately reflect the costs of providing future service, allowing the need for new capacity to be tested, so far as possible, by the marketplace; and

(3) furthering the goal of rate stability by providing for smoother increases in electric rates to consumers.

We believe that under present conditions, these objectives are furthered by inclusion of substantial amounts of CWIP in rate base. Arguably, they justify the inclusion of all CWIP, but we are not prepared to go that far at this time. In the rule

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31/ The two principal advantages of the original cost method are its simplicity in implementation and its positive effect on utilities' present-day cash flow.

32/ See also infra, at § IV.C.1.b.

adopted here, we generally permit utilities to include 50 percent of CWIP. 33/

Experience or changed conditions may dictate that this rule should be modified in the future, either to reduce or to increase the amount of CWIP allowed. For the present and for the foreseeable future, however, we believe that the 50 percent level constitutes a reasonable balance between the principle of intertemporal cost responsibility and the need to create a regulatory setting within which the utility industry can supply the nation's need for electricity at the lowest reasonable cost. For the jurisdictional portion of individual companies, the rule adopted here should generally produce sufficient current cash income to cover the fixed interest and preferred dividend costs and a small part of the cost of common equity for the investment in the work under construction but will defer any cash return on the greater part of the equity investment until the plant begins to provide service. 34/ At the industry level, the rule will restore the ratio of construction

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33/ This description must be qualified. The rule allows inclusion of up to 50 percent of CWIP allocable to electric power sales for resale. The 50 percent CWIP allowance would be computed after inclusion of 100 percent of the CWIP related to pollution control and fuel conversion facilities. In recent years, pollution control CWIP has averaged about 11 percent of total CWIP. No data are available on fuel conversion CWIP.

34/ *See* Environmental Assessment, *supra*, at Section 4.3.4. (A policy allowing recovery of *only* the CWIP-related interest expenses and preferred dividends would, on a national basis, increase rates by slightly less than a 50 percent CWIP policy.)

work outside the rate base to the total rate base to the level prevailing in the early 1970's; the ratio will still be, however, significantly higher than it was in the 1950's and 1960's. 35/ The likely rate impacts resulting from the rule are detailed below.

D. CWIP and the Problem of Financial Constraints

The history of the electric utility industry since the middle of the 1970's has been punctuated by frequent cancellations of planned generating capacity. Between 1974 and 1978, 184 generating units that would have provided 155 MW of capacity

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35/ In 1979 and 1980, CWIP constituted about 40 percent of net plant in service for Class A and B electric utilities. Allowing 50 percent CWIP in rate base would bring the ratio of CWIP to net plant down to about 20 percent which was the average level prevailing between 1970 and 1974. During 1950-1969 CWIP averaged only about eight percent of net plant in service; by the end of the second decade in this period, the CWIP percentage began to rise dramatically. A similar aggregate industry impact would be produced by including all CWIP in rate base above some threshold level. That alternative would also focus the impact of the rule more sharply on utilities with large amounts of construction work in progress in relation to their rate base. We have nevertheless rejected that alternative for two reasons. One is that it would be somewhat more complex to administer. The second is that it would mean that utilities with relatively large construction programs would be able to include 100 percent of any incremental investment in rate base. While we are not entirely convinced that it is necessary to leave a part of the cash return on equity dependent on completion of the project, we prefer at this time not to rely wholly on other means of ensuring the expeditious completion of construction work.

were cancelled. More than half of all powerplants coming into operation since 1974 have been delayed. The delay has increased from an average of 14 months in 1974 to an average of 23 months in 1978 to an average of more than 40 months in 1979. 36/

Some have viewed these cancellations and deferrals as merely an adjustment to more realistic projections of future demand. 37/ But this view is by no means universally shared. Several commenters argue that the resumption of growth in the demand for electricity even at a rate substantially lower than the one prevailing up to around 1973 would begin to strain available capacity by the end of the decade; 38/ and even if

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36/ Appalachian Power Co., *et al.*, Initial Comments at 27. *See also* North American Electric Reliability Council, *11th Annual Review of Overall Reliability and Adequacy of the North American Bulk Power Systems 14 (1981)* (Between 1978 and 1981, at least 52 generating units -- 55,000 MW of capacity -- were cancelled or indefinitely deferred); Electrical World, *Utility Capital Spending Rises in 1981*, August 1981, at 14 (In the first quarter of 1982, seven generating units or 8,700 MW of capacity were cancelled or deferred).

37/ Lovins, *Energy Strategy: The Road Not Taken*, 55 Foreign Affairs (1976) at 65-96.

38/ *See, e.g.*, U. S. Department of Energy, Initial Comments at 16. This warning has also been sounded in much of the literature. *See, e.g.*, 3 Energy Information Administration, U. S. Department of Energy, *1981 Annual Report to Congress* 48-50 (1982); Energy Information Administration, U. S. Department of Energy, *Impacts of Financial Constraints on the Electric Utility Industry* (1981) (hereinafter cited as *Impacts*). Putnam, Hayes and Bartlett, Inc., *An Economic Evaluation of the Replacement of Oil-Fired Generation Capacity With Coal-Fired Capacity*; Electrical World, *33rd Annual Electrical Industry Forecast*, September 1982, at 75-86; Navarro, *Our Stake in the Electric Utility Industry*, Harv. Bus. Rev., May-June 1982, at 85. *But see* A. Kaufman, K. Nelson, *Do We Really Need All Those Electric Plants*, Congressional Research Service (August 1981).

new plants are not needed for added capacity, on some calculations they are still economically justified as replacements for costly oil-fired and gas-fired generating capacity. 39/ On this latter view, the cancellations do not reflect the limited need for the new plants but the utilities' limited ability to finance them.

Projections of demand growth for electricity have been characterized by uncertainty, inaccuracy and controversy for over a decade. In this rulemaking we express no views on the future growth of the demand for electricity, or on the question whether new generating facilities may be economically justified even in the absence of demand growth. Nor do we assume that such growth as may occur is best served by capital intensive coal or nuclear plants. It is not our object to influence electric utilities either to add new capacity or to select one technology over another. Rather, our purpose is to create a regulatory framework within which utilities can make an unbiased assessment of the need for new capacity and of the best means of meeting that need.

39/ See Appalachian Power Co., et al., Initial Comments at 30; Department of Energy, Initial Comments at 12. The argument for new capacity is not in fact entirely distinct from the preceding one. If additional capacity is needed, it may be possible to provide it within a relatively short time with gas-fired turbines. The result of the shortage of base-load capacity then would not be a shortage of electricity but rather unnecessarily costly electricity. See also Navarro, Long Term Consumer Impacts of Electricity Rate Regulatory Policies (January 1983) DOE/PE/701066-1.

At present, economic regulation biases utility decisions in two respects: it creates a bias against the creation of new capacity; and to the extent that new capacity is built, it creates a bias in favor of minimizing capital costs, rather than minimizing total economic costs. Possibly the bias will not affect utilities' decisions; utilities may assess the need for capacity and the most economic means of providing that capacity without regard to the effect of their decisions on investors. If the bias does affect decisions, the result may nevertheless be one that serves the public interest; even a broken clock tells the correct time twice a day. However, we do not consider it sound regulatory policy to rely either on the eleemosynary inclinations of regulated companies or on the chance coincidence of regulatory bias and the public interest. It may be impossible to rely wholly on economic incentives to encourage efficient decisions by the companies that we regulate, but we can at least try to avoid creating incentives for them to make inefficient ones.

The regulatory bias has two sources. One is utilities' inability to earn a return equal to their cost of capital. When a utility's earned return is less than its cost of capital, its investors' interest are best served by avoiding investment in new capacity; to the extent that new capacity is built, they are best served by minimizing the investment made to provide that capacity. As discussed earlier, inclusion of CWIP in rate base would reduce this source of bias but not eliminate it. In the end, the remedy for inadequate returns is adequate ones. This Commission has issued a notice of proposed rulemaking on generic rate of return, partly for the purpose of more accurately determining the cost of capital of the utilities that we regulate, 40/ and we are continuing to study the relationship between the return that we allow and the one actually earned under the rates that we establish. The problem of inadequate earned returns also is being addressed by the state agencies that regulate the greater part of the electric utility industry. 41/ The result of these initiatives remains to be seen; the most recent studies available to this Commission continue to show earned returns well below utilities' cost of capital. 42/ Until this Commission and the state utility commissions succeed in closing this gap, the inclusion of CWIP can make a modest contribution towards offsetting this source of bias against new investment.

40/ Notice of Proposed Rulemaking, Generic Determination of Rate of Return on Common Equity for Electric Utilities, (Docket No. RM80-36), issued August 26, 1982, 47 Fed. Reg. 38,332 (August 31, 1982).

41/ Forecasted test years are gradually being used more widely at the state level. Since 1980 approximately nine state commissions joined the 14 which were already using some variant of forecasted test years.

42/ *See* Argus Research Corp., *supra* at n.17. *But see* Salomon Brothers Inc., *Electric Utility Regulation-Semiannual Review*, Industry Analysis 1, 3 (February 11, 1983) (Over the last year the gap appears to have narrowed due to increases in allowed rates of return on common equity and rapidly declining interest rates. However, this may be due to a regulatory lag in responding to declining capital costs.)

Inclusion of CWIP is more directly responsive to the second source of bias. This source is the cash flow problem created by the high cost of new base load plants in relation to the present rate base of some utilities. Since such companies generally earn a cash return only on rate base investments, it has often been difficult to finance these construction programs, particularly when the magnitude of CWIP is large in relation to rate base. As mentioned in the NOPR, 43/ CWIP as a percentage of net electric plant in service grew from 17 percent in 1970 to 40 percent in 1979. For many companies, of course, the percentage is much larger. The financing difficulties arise because the internal cash flow generated by rate base investments is often insufficient to support the required sales of debt and equity securities. 44/

There are two ways of addressing the problem of cash flow inadequacy. One way is simply to increase the allowed rate of return to produce higher earnings and cash flow. The other way is to allow a cash return on construction investments by including CWIP in rate base. While both approaches have the immediate effect of raising rates, the allowance of CWIP in rate base causes the future rate base, and thus future rates

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43/ Notice of Proposed Rulemaking, Construction Work in Progress for Public Utilities, (Docket No. RM81-38), issued July 27, 1981, 46 Fed. Reg. 39,445 (August 3, 1981).

44/ *See* Appalachian Power Co., *et al.*, Initial Comments, at Appendix H (October 30, 1981); Appalachian Power, *et al.*, Reply Comments, at Appendix C (January 15, 1982).

to customers, to be lower than they otherwise would be. On the other hand, raising allowed returns would not be matched by future reductions in rate base and rates. For this reason the Commission has recognized that where increased cash flow is desirable, the allowance of CWIP in rate base "would be the least costly alternative to ensure a utility's financial integrity and to enable it to attract the capital necessary to meet its capital needs." 45/

E. Inclusion of CWIP and the Assessment of the Need for New Facilities

Even an unbiased assessment of the need for new capacity must be based on some estimate of the future demand for electricity. Once such estimates were comparatively easy. Demand increased steadily with (but faster than) the growth of the economy, generally absorbing without difficulty the new capacity built by electric utilities.

The estimation of future demand has now become a much more difficult task. There are several causes for the increased difficulty. After the last decade it can no longer be safely assumed that demand will grow faster than the economy, but neither is it yet clear that we can assume that it will not do so. At the same time, the increased length of time between the beginning and the completion of new generating facilities requires that demand be projected further into the future.

45/ 46 Fed. Reg. 39,445.

Neither of the two causes just cited lies within this Commission's regulatory reach. There is, however, also a third cause for the increased difficulty in estimating future demand. This is the difference between the price of electricity at the time that demand estimates are made and the price at which electricity must be sold when the planned facility comes on line. Estimates of the future must begin with the present. To the extent that the future can be expected to bring not only general economic changes but also substantial increases in the price of electricity, the leap from current data to future projections becomes so much the more difficult.

There was a time when the price of electricity could be expected to decline as new generating facilities were brought on line. Economies of scale and technological progress easily outdistanced the modest rate of inflation. Today the addition of a new facility is more likely to mean higher prices than lower ones. For companies with large construction programs, this price impact is seriously aggravated by the exclusion of CWIP from rate base.

Without any CWIP in rate base, a new plant has no direct effect on consumer prices until it begins to provide service. 46/ Then, when it does come on line, consumers' rates must be increased to give the company a cash return on both the direct cost of the plant and the capitalized AFUDC as well as a return of capital through depreciation. If the plant is large relative to the existing rate base, the result can be a

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46/ It will have an indirect effect if exclusion of CWIP from rate base increases a company's cost of capital.

rate increase that is both large and sudden, producing a so-called "rate shock." 47/

In contrast, with all CWIP in rate base, the impact of a new plant is spread over the entire construction period, and the rates when the plant begins to provide service are lower because they do not include a return on and of capitalized AFUDC. The price increase is less smooth with the 50 percent policy adopted here, but the price path is still substantially smoother than it would be without any CWIP in rate base. We believe that this smoother and more gradual increase is likely to assist utilities in assessing the need for new capacity. To the extent that unnecessary capacity is thereby avoided, the inclusion of CWIP in rate base will not merely shift the burden on consumers from the future to the present. It will also effect a clear reduction in that burden. Thus inclusion of CWIP will generally allow utilities to pursue least total cost strategies to meeting their customers' electric power demands.

47/ See, e.g., Middle South Utilities, Inc., Initial Comments, at 5 (illustrates comparative time patterns of rates under a CWIP and an AFUDC policy). For example, for Long Island Lighting Company, the result of including the Shoreman plant in rate base when it is placed in service in the fall of 1983 would be to increase retail rates by approximately 38 percent. See Electrical Utility Week, January 31, 1983. A similar "rate shock" is predicted for Iowa-Illinois Gas & Electric Company (anticipated 29.7 percent increase due to bringing new coal-fired plant on line). Both these companies have filed proposals with applicable state agencies to phase-in the rate base additions over a period of several years after the plants go into service rather than include all the costs in rate base on the in-service date. Other utilities, including Public Service of Indiana and New Orleans Public Service Company are reported to be considering similar steps. Id.

F. The Inclusion of CWIP and Economic Regulation

The inclusion of substantial amounts of CWIP in rate base will not by itself solve the problems of the electric utility industry. We believe that it will, however, contribute to the goal of meeting the future need for electricity at the lowest possible cost. It perhaps would not be the means that we would choose for this purpose if we had an unlimited choice. However, the alternatives available to us are limited by the nature of public utility regulation.

Public utility regulation in the form that we know it is virtually unique to this country. The industries that are regulated public utilities in this country are elsewhere generally owned by the government. Public utility regulation is a compromise between nationalization on one hand and unregulated free enterprise on the other.

It is a compromise that on the whole has served this nation well. In price and quality of service, the performance of the public utilities of this nation compares well with that of comparable industries elsewhere in the world. However, the kind of cost-based regulation generally used for utility regulation closes off some solutions to financing large capital additions. In an unregulated market, the approach of capital constraints would allow companies to earn temporary excess profits. On the supply side, these profits would help to finance new additions; on the demand side, the associated high prices would help to test the need for additional capacity and to ration supply until new capacity was brought on line. On the other hand, if electricity was generated by government corporations, future new capacity could be financed by current tax revenues to the extent that it was not financed by current sales. 48/

Indeed, one representative of a number of municipally-owned systems which participated in the proceeding stated during the public hearing that it is "clear that in some instances municipals may in fact have a de facto CWIP" in rate base policy. 49/

These other alternatives are not available to us. Although we are not *strictly* limited to cost in the rates that we set, 50/

48/ Alternatively, a nationalized corporation may issue bonds to finance the need. Since the corporation is part of the state, it is able to borrow funds at lower rates than would be available to a private borrower. This subsidy tends to be financed through higher interest rates paid by non-government borrowers. In addition, the interest cost of the bonds would in general be paid out of current tax revenues; as with the CWIP alternative, therefore, the carrying charges on the construction work would be borne by *present* taxpayers or ratepayers.

49/ *See* Statement of Mr. McHugh, representing ElectriCities of North Carolina, *et al.*, transcript of December 7-8, 1981 public hearing at 420. *See also* Statement of Mr. Ritts on behalf of APPA, transcript at 336 ("I must be frank with you that there are some of our systems that may currently charge customers for part of the cost of the plant"). *See also* Reply Comments of Appalachian Power Co., *et al.* at 65-71.

50/ *See, e.g.*, Panhandle Eastern Pipe Line Co. v. FPC, 324 U.S. 635 (1945) (in setting pipeline's jurisdictional rates, the Commission may properly take into consideration unregulated rates for direct industrial sales); City of Detroit v. FPC, 230 F.2d 810, 814 (D.C. Cir. 1955), *cert. denied*, 352 U.S. 829 (1956) (use of unregulated field price is not necessarily excluded for purposes of setting rates for pipelines's own production, nor is rate base method mandatory in all circumstances); Permian Basin Area Rate Cases, 390 U.S. 747, 795 (1968) (FPC obligated to give continuing attention to values that may be reflected only imperfectly by costs); and Texaco v. FPC, 417 U.S. 380, 399 (1974) (Commission may take into account the market price of unregulated gas in determining the just and reasonable rate for regulated gas supplies).

there are limitations on the extent to which we can cut ourselves free from cost-based standards, and we altogether lack the power to tax. These limitations were of no consequence so long as utilities could readily finance new capacity strictly on the promise of future cash revenues, but their ability to do so is now in doubt.

In this rulemaking we therefore have turned to the regulatory tools at our disposal, and in doing so we have concluded that the long-run public interest is best served by a departure from the general principle of cost responsibility. The departure is not total. We are allowing only 50 percent of CWIP to be included in rate base. The remaining amounts of CWIP will continue to receive AFUDC treatment and will not be directly reflected in rates until the plant begins to provide service. More importantly, present customers do derive significant benefits for capital expenditures for plants that are not yet providing service.

Utilities invest in additional facilities when customer needs indicate. By planning and constructing new facilities to meet customer requirements, utilities confer a present benefit on customers, namely, the reasonable assurance of a continuing quality of service. It is reasonable for current ratepayers to pay for this benefit.

The direct beneficiaries of construction expenditures are, however, the customers that will be served by the plant. The departure from the general principle of cost responsibility will not place the full burden of construction costs on these customers and might be analogized to the one that occurs even in a competitive unregulated market when price temporarily exceeds marginal cost during a period of limited capacity, but the closer analogue may be the use of current tax revenues to finance public works that will serve the future. We have cited the case of government-owned electric utilities but the analogy extends to virtually all public investment.

The needs of the future must be met. 51/ Those needs can to some extent be financed by the persons who will directly benefit, but such a nice alignment of benefit and burden is not always possible. We have concluded that it is not possible on the CWIP issue. Or, to state the point more precisely, we have concluded that a rigid adherence to the cost responsibility principle on this issue would not be consistent with our responsibility to further the maintenance of an adequate and efficient electric utility industry.

51/ While utilities under our jurisdiction may not have an explicit obligation to serve requirements customers, they would not be allowed to terminate such service unless they could show that it was in the public interest. Even if we made such a finding and the distribution utility went out of business, the supplying utility would, in most states, be obligated to provide direct service to the customers of the distribution utility because they would be considered retail customers in the supplying utility's service territory.

IV. COMMENT ANALYSIS

A. Introduction

Due to the financial importance of the Commission's proposals in this docket, the Commission determined to provide for a thorough airing of opinions and an adequate opportunity for interested persons to submit comments. For nearly six months, ending January 15, 1982, the Commission received written initial and reply comments. Two days of oral presentations were also held. As a result of this process, the record in this proceeding contains, among other things, the comments of 33 Federal and state government representatives, 11 firms serving the accounting and financial needs of the electric utility industry, 57 investor-owned utilities or groups, 2 natural gas utilities or industry representatives, 52/ 51 wholesale customers or groups of customers of jurisdictional utilities, 57 consumer representatives and consultants, and several hundred individuals (mainly in the form of postcard comments). At the hearings, 25 representatives of a variety of interests presented their views on

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52/ These commenters urge the Commission to extend the effect of this rule to natural gas utilities. The Commission has distinguished between natural gas and electric utilities with respect to the treatment of investment in construction projects on the basis of the length of construction periods and the financial condition of each industry. See Uniform Systems of Accounts for Public Utilities and Licensees and for Natural Gas Companies (Classes A, B, C and D); Inclusion of Construction Work in Progress in Rate Base (Docket No. RM75-13), issued November 8, 1976, 41 Fed. Reg. 51,392-51,394 (November 22, 1976). No change in Commission policy regarding this distinction has ever been contemplated in this proceeding. This proposal is therefore not adopted.

the treatment of CWIP, responded to questions from Commissioners and staff, and debated many of the central issues in this proceeding. This rulemaking also attracted several letters and suggestions from Members of Congress.

Generally speaking, investor-owned utilities and the financial community support a policy of including a significant portion or all CWIP in rate base. The wholesale customers of investor-owned utilities, primarily municipal and cooperative-owned utilities, retail consumer organizations, large industrial customers, and individual retail consumers and small businesses oppose the inclusion of any CWIP in rate base and favor the use of AFUDC for financing costs. The comments of Federal departments and agencies, state and local regulatory authorities, and consultants were divided on the question of CWIP in rate base. 53/

53/ In the Notice of Proposed Rulemaking, the Commission defined CWIP as "amounts properly included in Accounts 107 (construction work in progress) and 120.1 (nuclear fuel in process of refinement, conversion, enrichment and fabrication) 46 Fed. Reg. 39,454. Both CWIP and nuclear fuel in process of refinement, conversion, enrichment and fabrication are investments in material which will later be used to serve consumers but which, during the development process, still require financial resources from the utility. Presently, nuclear fuel in Account 120.1 receives AFUDC treatment in the same manner as balances in Account 107. Moreover, nuclear fuel is typically removed from Account 120.1 when it becomes a usable fuel stock. This parallels the treatment of investment in new plant which is included in Account 107. The accrued financing costs which are capitalized in each account would be part of the balance eligible for rate base treatment. No commenter addressed the rate base treatment of nuclear fuel being processed. The statements submitted by several wholesale customers and consumer groups stating the general concern that nuclear facilities will comprise a significant portion of CWIP are addressed below.

B. The Financial Condition of the Electric Utility Industry

1. Source of the Problem

In issuing the Notice of the Proposed Rulemaking, the Commission viewed the financial condition of the industry as an important reason for considering an expanded use of CWIP in rate base. Commenters, therefore, regarded analysis of that condition as central to this proceeding and the comments are sharply divided.

Investor-owned utilities, several financial institutions, and the U.S. Department of Energy (DOE) generally view the electric industry as facing serious financial problems that may be mitigated by the inclusion of a percentage of CWIP in rate base for all utilities. Most other commenters find that, while individual utilities may be in financial distress, the entire industry is not in distress. Rather, they point to recent indicators that show a general improvement in the ability of utilities to attract capital. These commenters favor a case-by-case consideration of any CWIP requests and no departure from the rule expressed in § 2.16 of the Commission's regulations. Even among commenters who recognize that the industry is facing general financial difficulty, some would allow for CWIP in rate base only on a case-by-case basis.

The source of current financial difficulties is debated by commenters. A sizeable contingent of commenters, mainly investor-owned utilities, financial organizations, the General Accounting Office (GAO) and DOE argue that the widespread financial distress in the industry is directly related to the need to finance ongoing construction. The crux of the argument is that cash flow shortfalls arise from the need to provide new generation plant in the face of inflation in construction costs, delays in construction due to regulation, and the rising cost of capital. Financing costs, in turn, have risen, in part because of reduced bond ratings, the reduced value of common stock, the lower percentage of internally generated funds available to pay for construction, and the increased size of AFUDC as a percentage of income.

Support for this view comes from a major financial rating agency which contends that the plight of the industry is such that it has suffered severe financial deterioration during the last decade because of spiraling fuel costs, double-digit inflation, reverse economies of scale in new construction costs, and increasing and more costly external financing requirements. These factors, this commenter argues, contributed to downgrading more than 150 bond issues since 1970. In 1970, for example, 60 percent of rated electric utility first-mortgage bond issues were rated "AA" or higher by Standard & Poor's (S&P). By 1981, less than 30 percent were in that category. Further, although allowed rates of return have increased from about 12.5 percent in the 1970's to 14 percent in 1980, the actual earned rates of return on investment have not moved proportionately. Indeed, by 1980, they were 11 percent compared with 11.8 percent in 1970.

The quality of earnings has also deteriorated substantially, according to investment analysts. In this regard, one commenter from the financial industry states that virtually all investors responding to a survey stated that the value of the AFUDC component of a utility's earnings is lower in quality than cash earnings. The non-cash nature of AFUDC earnings, essentially an IOU for future payment of present earnings, is said to be of inferior quality. Whereas in 1970 only 11.8 percent of utility earnings were AFUDC "paper earnings," fully 46.3 percent of earnings were AFUDC related in 1980, explains one commenter.

Additional perspective on the problem is supplied by a rating agency, which states that the industry's financial flexibility is limited by: (1) the existence of bond indentures that restrict many companies from issuing new debt; (2) common stock prices below book value whereby new stock issues at those low prices dilute the value of existing common equity; and (3) growing capital requirements of the electric industry in a contracting capital market. This picture is generally acknowledged to be accurate by several commenters from the private financial community. Government sources also concur in this regard.

The GAO states that the industry's poor financial performance is closely tied to inflation, high interest rates, and, in general, the swings in business cycles. It is compounded by long-term construction projects, unanticipated energy conservation, and the fact that current utility earnings are based on older generating plants which cost much less to build than today's plants. As a result of these factors, the GAO states that as of April 1981, the common stock of 98 out of 100 of the largest investor-owned electric utilities was selling below book value. Although only four of the largest 100 electric utilities had a BBB bond rating in 1970, about 30 percent are now rated BBB. The GAO also states that the financial community does not believe that utilities are receiving a rate of return that compensates adequately for the present cost of money. Additionally, GAO comments that a particular problem is that the utility industry is capital intensive. Generally speaking, inflation has had a more disruptive impact on this industry than on others, it is argued, and utilities are now faced with the need to refinance, at current rates, maturing long-term debt originally issued at 2 to 3 percent.

The principal concern of DOE is the financial ability of utilities to undertake needed construction. DOE indicates that because of the present financial situation, utility management has adopted a "capital averse" behavior which avoids investment, wherever possible, by cancelling or deferring the construction of needed generating capacity in favor of less capital-intensive, and less than optimal, generating plant. This behavior arises, argues DOE, because of the rising cost of construction and the inability of utilities to cope effectively with the ensuing financial constraints. According to DOE, construction costs quadrupled between 1967 and 1979 while cash earnings declined to 30 percent of current expenditures, well below the 50 percent target cited by some Wall Street analysts as a recommended minimum. DOE also sees further deterioration in interest coverage ratios when non-cash AFUDC is excluded (4.0 in 1967, 2.0 in 1980), in realized rates of return, and in net earnings excluding AFUDC. The decline in cash earnings has been interpreted by some analysts and investors to signal a decline in the quality of earnings. Cash earnings of utilities now cover only two-thirds of dividend payments and there has been a marked decline in the ratio of the market price of common stock to its book value.

Several state utility commissions specifically state that utilities are experiencing financial difficulties due primarily to the increased cost of construction resulting from delays, the long lead time required for construction of base-load generation facilities, and inflation.

Numerous wholesale customers of investor-owned utilities, present a different portrait of the industry's condition and its underlying causes. While acknowledging the difficult financial condition of some utilities, these commenters attribute the industry's difficulties to a decline in the quality of utility management and decision-making and to nuclear construction programs that are often adversely affected by federal regulation and technical problems. Moreover, these commenters argue that inclusion of CWIP in rate base will not improve the condition of utilities beset with such problems. However, some of these commenters argue that, if rate relief is used to combat the adversities facing investor-owned utilities, it should take the form of higher rates of return.

Among the customer groups, many commenters simply doubt that all electric utilities are in financial difficulty and some argue that the financial picture of investor-owned utilities has improved markedly in recent months. These commenters point out that two-thirds of the investor-owned utilities have a bond rating of A or better and that the BBB rated bonds of utilities deemed to be in financial distress are still considered investment grade. Some individual public and cooperative systems believe that Commission actions, including tax normalization, future test periods, recovery of investment in abandoned projects, and fuel adjustment clauses, in addition to the Economic Recovery Tax Act of 1981 (ERTA), have in recent years greatly improved the financial picture for most utilities. In addition to increased regulatory sensitivity at the state and federal levels to potential utility problems, the wholesale customers claim that there has been a leveling in utility capital needs, arguably because there is an excess of future capacity. Moreover, these commenters foresee that decreased inflation will reduce capital financing requirements and costs to utilities causing market-to-book ratios to improve. Representatives of wholesale customers observe that the allowance of CWIP would be inflationary and that, as interest rates continue to decline and electric rates increase, fewer utilities will experience serious financial difficulties.

In summary, wholesale customers find the picture of industry-wide distress to be seriously overstated. Retail consumers, consumer groups, environmentalist organizations, and large industrial customers generally concur in this view.

We believe that the record in this proceeding clearly shows that the electric utility industry has been in a weak financial position. While general economic conditions may have exacerbated the financial difficulties of some companies, there is ample support that the electric utility industry has experienced particular difficulty in financing construction programs. Equally clear, this difficulty has led to general deterioration of the industry's financial posture.

The major indicators of the financial condition of electric utilities seriously deteriorated over the past decade. A decline in bond ratings was pervasive. Thirty percent of the industry is now BBB rated. Earned returns lagged behind capital costs, which increased sharply. Internal cash generation as a percent of construction expenditures fell dramatically.

Perhaps this decline has leveled off and, as some commenters state, has reversed to some degree in the months since the Notice was issued in this proceeding. Even if we assume that it has, the Commission must do what it can to ensure that the financial picture will continue to improve. The financial condition of utilities should not be left totally subject to swings in business cycles. Our regulatory responsibilities do not permit us the luxury of simply relying on the hope that conditions will continue to improve. The Commission must take whatever steps will assist the process and to remove the existing bias against increased capital spending for new capacity.

Because the financial condition of the industry at a particular point in time is not necessarily indicative of the health of the industry, the Commission's concern is more with the long-term outlook in light of the service demands that are anticipated. If the investment necessary to meet that obligation can be expected to undermine the health of the industry, deterioration in service can be foreseen. To encourage the type of investment necessary to maintain infrastructure sufficient to meet service requirements, a regulatory remedy to offset the financial drain posed by construction is necessary.

2. Adequate and Economical Construction of Plant

Any consideration of the inclusion of CWIP in rate base naturally raises the question whether utilities need to build additional capacity either to replace worn out or inefficient plant or to meet the growth in the needs of the customers. Many commenters claim that new electric plant must be continually constructed to: (1) improve or replace existing plant; (2) service increased demands from existing customers; (3) respond to changes in government policy, such as pollution control; and (4) meet service demands of new customers moving into the service area. However, utilities emphasize that an appreciation of the financial stress on them necessitates an understanding of the unique feature of their operations -- the obligation to serve.

Electric utilities continually construct new facilities because they have an obligation to serve, even if expanding service may not be profitable. The pressure to anticipate and build for future demand leads to construction programs that have a direct impact on finances and, consequently, on the consideration of any CWIP policy. Several utility systems emphasize the need to undertake construction at "optimal levels." 54/ Such construction, it is argued, enables a utility to switch from oil-fired generation to coal or nuclear generation and to stop building short-term, "band-aid" generation facilities which,

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54/ See, e.g., Appalachian Power Co., et al., Initial Comments at 22.

though less expensive to build, invariably would represent a greater long-term cost to ratepayers. A number of utilities cite the delay or cancellation of such optimal construction programs because of financial constraints. They assert that this creates higher costs to consumers because of increased reliance on purchased power or the inflating costs of deferred construction. Arguably, the prospect is for a decline in service reliability if construction is not undertaken at optimal levels.

Investor-owned utilities claim that they face construction lead-times that have increased from roughly five years in 1960 to 10 or more years in 1981. They also cite significantly higher construction and financing costs for new projects. Some of these commenters view this deteriorating situation as exacerbated by burdensome regulatory requirements and the phenomenon that new plant no longer increases operating efficiency sufficiently to offset the higher cost of construction. As a result, the cost of constructing and replacing utility plant is escalating. There is therefore a significant trend in the industry toward cancelling or deferring capacity scheduled for the mid-1980's and early 1990's. Reflective of this, DOE states that over the last two years very large amounts of general capacity have been deferred or cancelled.

DOE states that it is unable to determine to what extent these delays and cancellations were caused by reduced demand

and to what extent to risk of capital aversion. However, it predicts that, if delays and cancellations are caused by financial constraints, they will continue unless remedial action (such as CWIP) is taken. DOE cites examples of financial constraints that prohibit utilities from undertaking economically efficient construction programs. For example, in 1980, well over half of all planned capacity had announcements of delay or cancellation. This is cited as further evidence of the "capital averse" behavior by the utility industry which could result in dangerous shortages of capacity after the period of low demand growth in the early 1980's comes to an end. DOE anticipates that the current respite from demand growth will dissipate and utilities must be prepared to meet an upswing in demand that could come as a result of economic recovery.

Commenters that oppose the rule have a different view of the prospects for, as well as history of, demand growth and the response to it by utilities. They claim that the cause of the current troubled state of the industry is the decline in growth of demand and that new large construction programs are unnecessary or not optimal. Several retail customer groups find that utility management acted imprudently in resorting to large construction programs in the past, particularly construction of nuclear generation. Because about two-thirds of current CWIP financing represents nuclear construction, much of which is allegedly beset with technical difficulties, these commenters generally resist the notion that construction programs should be afforded CWIP treatment. Objections to the rule are therefore raised in the context of disagreements over the composition and size of construction programs, as well as the overall need for future additions to capacity. Some commenters even fear that the proposed rule would encourage or vindicate management decisions that are allegedly unwise and contrary to the interests of ratepayers.

The rule we promulgate today, however, in no way immunizes utilities from allegations that particular management decisions are unwise or imprudent. Its effect in this regard is only to put a portion of construction work which is underway on a more equal footing with plant which is already in service. This does not prejudice any questions which may be raised in individual rate cases concerning the prudence of particular utility investment decisions.

With respect to the question of continued need for greatly expanded generating capacity, we again stress that the present rule is not predicated on an assessment that enormous new capacity is necessarily required. To the contrary, we believe, as stated earlier, that the need for new capacity should be tested by the market to the extent practicable. The present rule furthers this goal by smoothing out the price increases which are associated with additions to capacity, thereby giving both customers and utility management a clearer idea of current and future price levels and demand.

3. Impact of AFUDC

Under existing Commission policy, all costs of construction, including interest charged on amounts borrowed (the "cost of money"), are capitalized in a separate utility account and denied any rate treatment until the plant under construction is placed in service. The allowance for funds used during construction (AFUDC) and the cost of construction are put into rate base when the plant is placed in service. A limited exception to this approach is provided in § 2.16 for investment in pollution control and fuel conversion facilities and in cases of financial distress.

Investor-owned utilities and financial firms state that the problem with AFUDC is that it inevitably represents low quality earnings for utilities. In effect, AFUDC is not income but a promise-to-pay upon completion of construction. These commenters argue that, as AFUDC increases as a percentage of total utility income, debt and equity financing costs increase because investors and analysts tend to view AFUDC as more risky than cash earnings. In addition, they state that because accrual of AFUDC does not create current cash flow, it deprives the utility of funds when they are most needed, that is, during the period of construction of plant. Moreover, because AFUDC accruals are added to the total cost of the new facility included in rate base, the revenue requirements associated with the plant increase for the life of the plant. Finally, the AFUDC methodology creates a surge in rate base at the time a plant is placed in service. These commenters also state that an AFUDC policy hides the true cost of providing power from consumers, thus defeating conservation and making construction appear more necessary.

By way of analysis, one investor-owned utility states that AFUDC affects the cost of capital by decreasing bond ratings one grade and increasing the cost of equity 318 basis points [55] on average. A lending institution believes AFUDC amounts are discounted in evaluating income and equity accounts, thereby affecting a utility's credit-worthiness. Moreover, the financial community ascribes to AFUDC policy the doubts of investors regarding the promise of future earnings, in contrast to cash earnings, if a utility must finance capital costs on construction projects until the in service date. This purportedly depresses the value of common equity. In any event, they argue, CWIP has the advantage of providing cash flow during the construction cycle, when cash is most needed to complete major projects.

In contrast, a variety of retail consumers, including industrial consumers, and wholesale utility customers discount the importance of AFUDC in the continuing financial situation of utilities. They point out that the FERC Uniform System of

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[55] A "basis point" is equivalent to 1/100th of one percent. It is a measure of increases or decreases in the cost of borrowed money or the yield on loans.

Accounts defines income (including AFUDC) as recorded revenues less expenses, not less cash, and that no studies demonstrate that investors back away from companies having AFUDC balances. There is, they argue, little impact on the cost of equity because AFUDC and retained earnings are, conceptually, sources of future income and both represent a deferral of current cash income to the investor. Finally, several customer commenters assert than an AFUDC policy has positive benefits. AFUDC accounting, for example, provides a financial incentive for a utility to minimize construction delays. 56/

As indicated above, the Commission believes that the existing reliance on AFUDC should be modified. The AFUDC approach does not necessarily guarantee that utility plant will be constructed more economically or expeditiously. What it apparently does do, is mask from the ultimate consumer the real cost of power during the period when a new plant is being constructed, thereby encouraging demand which serves to distort estimates of future demand and the attendant need for new capacity.

AFUDC was a useful tool when construction periods were short, inflation moderate, and the competition for capital less intense. However, the aggravation of these three factors brings into question the viability of the AFUDC method. Also

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56/ In response, utilities state that it is the AFUDC method that inhibits project financing and causes expensive construction delays. This is because of such factors as the financial constraints utilities experience when interest coverages fall below indenture requirements for issuing new debt.

of importance is the timing of AFUDC and CWIP income relative to a utility's cash needs. CWIP in rate base has the distinct advantage of providing cash at the time the utility is in most need of cash flow, that is, during construction.

C. Several Legal and Policy Considerations

1. Presumption Against Inclusion of CWIP in Rate Base

In the Commission's rate regulation of electric utilities, capital costs are generally included in rate base only if the investment is in plant that is "used and useful," or, to put it another way, only if the ratepayers who are paying the costs are getting the benefits.

Commenters are divided with respect to whether this presumption against CWIP in rate base is correct and, perhaps more importantly, whether it remains relevant. Wholesale and retail ratepayers support this as an operative and controlling ratemaking principle predicated on the concept of "used and useful" in the law, the notion that there must be equity between generations of ratepayers, and the claim that retention of the presumption best duplicates a competitive market. In contrast, investor-owned utilities and financial organizations state that the presumption against the inclusion of CWIP in rate base is based upon an archaic and erroneous interpretation of the "used and useful" concept. They controvert the conclusion that plant must be in service to be "used and useful" to current ratepayers or that inequities result if ratepayers pay for plant under construction. Nor, argue several but not all companies, should the electric utility industry be treated in a manner analogous to unregulated business operating in a free market.

a. "Used and Useful"

Public utility plant under construction historically has been excluded from rate base prior to its providing actual service to utility ratepayers. The "used and useful" concept supposedly originated with the decision in Smyth v. Ames, 169 U.S. 466 (1898) in which the Supreme Court, finding that a Nebraska law fixed unreasonably low freight rates, held that rates must be computed according to the fair value of property used to service the public. 57/ The principle that a utility is entitled to earn a return on property that is "used and useful" in serving the utility's ratepayers is generally used by this Commission, despite widely recognized exceptions and departures from this rule, particularly when there are countervailing public interest considerations. 58/ In this regard,

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57/ For relationship of the used and useful theory to the prudent investment theory, consider Washington Gas Light Co. v. Baker, 188 F.2d 11, 18-19 (D.C. Cir. 1950).

58/ See Tennessee Gas Pipeline Co. v. FERC, 606 F.2d 1094, 1109 (D.C. Cir. 1979). NEPCO Municipal Rate Committee v. FERC, 668 F.2d 1327 (D.C. Cir. 1981). Departures from the "used and useful" principle are, in some cases, routine practice. For example, land held for future use has been regularly included in the rate base upon which the utility earns its return. Moreover, the use of a future test period allows inclusion in rate base of plant which will be in service during the test period but which may not be operable on the effective date of the new rates. Somewhat akin, are purchase gas adjustment clauses and fuel adjustment clauses which charge a projected cost to customers for service rendered.

the Commission agrees with the courts:

> The legal system does not compel rigidity, or bureaucratic inflexibility, least of all in an area like energy policy where flexibility may be essential to the public interest. 59/

In light of lengthening construction cycles, relatively high inflation, and the proportional significance of capital financing costs in relation to overall project costs, this Commission -- as well as many state regulatory authorities -- have reexamined the basis for the exclusion of CWIP from rate base and have often disregarded the "used and useful" concept when the reliability of future service is in doubt. This was, in fact, one basis of the FPC's Order No. 555 which ventured to provide some CWIP relief to financially distressed utilities, 60/ in addition to rectifying anticipated intergeneration inequities by encouraging expenditures for pollution control and fuel conversion facilities through rate base treatment.

Few commenters in this proceeding analyze the legal significance of the "used and useful" test. Comments focus on equitable and economic considerations. Investor-owned utilities and others suggest that the Commission abandon the concept and financial organizations state that the concept has little applicability to the needs of a financially weakened industry

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59/ Consolidated Gas Supply Corp., *et al*. v. FPC, 520 F.2d 1176, 1185 (D.C. Cir. 1975) *quoting* Public Service Commission v. FPC, 511 F.2d 338, 353 (D.C. Cir. 1975).

60/ "Inclusion of Construction Work in Progress in Rate Base" (Docket No. RM75-13), issued November 8, 1976, 41 Fed. Reg. 51,392, 51,394 (November 22, 1976).

or to those of the Nation. Supporters of CWIP in rate base emphasize that current ratepayers benefit from ensuring the future supply of electric power. Predictably, other commenters believe that any deviations from "used and useful" will cause interperiod ratepayer subsidization, that is, current ratepayers would subsidize future ratepayers by contributing to future plant additions. These commenters agree that it is essential to match costs with benefits, regardless of the financial condition of the industry.

The Commission need not, in this proceeding, pronounce further on the validity of the "used and useful" concept. However, it must be reemphasized that the "used and useful" concept, if administered inflexibly and without regard to other equitable and policy considerations, may fail the interests of both the electric utility industry and its ratepayers. Therefore, a more fruitful discussion of this issue may be conducted in terms of the economic equities upon which most commenters focus.

The fundamental debate over whether allowing CWIP in rate base is consistent with the "used and useful" doctrine is, in this proceeding, really a debate over the question of intergenerational equity, the point to which we now turn.

b. Intergenerational Equity -- Matching Costs and Benefits

Several commenters state that the inclusion of CWIP in rate base violates the concept that current ratepayers should not bear the cost of future electric service. The inclusion of CWIP in rate base, several commenters contend, would create an interperiod mismatch of costs and benefits whereby current ratepayers would subsidize future electric power customers. This is labeled an "intergenerational inequity." These commenters believe that capitalizing AFUDC is fair for both present and future ratepayers because the cost of plant under construction is recovered from those ratepayers that are served by the facility.

Investor-owned utilities dispute the contention that current ratepayers do not benefit from the construction of new generation facilities. First, these commenters state that it is more the increasing demands of existing customers rather than the obligation to provide service to new customers that necessitates large construction programs. This obscures the significance of any distinction between present and future customers. The argument concludes that in theory, the cost of new plant is assigned to all customers served by the utility rather than to the specific customers that create increased demand for power.

Second, investor-owned utilities argue that the persons or groups that currently would pay for CWIP will generally tend to be the same people who receive service from the facilities under construction. According to the utilities, not only are ratepayers recognizable as utility's customers for decades at a time, they also tend to commit actions (such as making capital investments in electricity-using appliances and equipment) that presume a reliable, continuous, and sufficient supply of electric power into the future. As a result, current ratepayers are arguably very likely to be direct beneficiaries of CWIP in rate base.

The comments on the relative equities of CWIP in rate base muster additional arguments that (1) such a policy leads to a more accurate pricing policy that signals the real cost of meeting future ratepayer requirements and the real incremental cost of current usage; and (2) a CWIP policy would reduce the current cost of capital, thereby reducing current revenue requirements, and benefiting current ratepayers.

In contrast, a variety of wholesale power customers contend that the inclusion of CWIP in rate base is inequitable in many ways. They strenuously disagree that present and future customers tend to be identical, pointing to the mobility of the American public and the phenomenon of municipalities or cooperative systems moving off system to establish their own generating capacity. In those cases, larger numbers of people would allegedly be deprived of the fruits of their investment in CWIP. In addition, numerous groups and individuals perceive that CWIP in rate base would put an undue burden on the elderly, whose prospect of being served by plant under construction are less than those of the general population. Wholesale and retail consumer interests also assert that CWIP does not provide appropriate price signals, in part because any higher rates reflecting CWIP in rate base do not generally include the offset for variable cost (fuel) savings necessary to provide an appropriate price signal to current ratepayers.

The question of intergenerational equity presents the Commission with difficult theoretical problems and compelling human issues. No public policy is perfectly equitable. The Commission is required nevertheless to strike a balance between investors and ratepayers. Likewise, it must balance the interests of present ratepayers and future ratepayers. Even under a strict application of the "used and useful" doctrine, current ratepayers pay for facilities necessitated by past demand and for the capital costs of unused capacity. Moreover, even if CWIP-based rates reduce total costs to the ratepaying public over a period of time, the intergenerational question remains because the question of who pays is distinct from the question of how much. In balancing the various interests involved here, certain observations can be made.

From the standpoint of federal regulation of wholesale rates as opposed to state retail regulation, there is less likelihood that individual ratepayers will bear costs for which no benefit is derived simply because a wholesale CWIP-based rate affects a broad segment of the public. It is reasonable to presume that the chances are relatively great that, in this national community of ratepayers, the person funding CWIP in rate base would also benefit from the contributions of others -- no matter where or how often that person might change service areas. Far more important, the Commission believes that the Nation as a whole has a critical interest in continuing service reliability at the most reasonable costs. The capital averse behavior of utility management, induced largely by escalating costs and long construction times, threatens to undermine that reliability.

If CWIP will help management to more accurately gauge the need for future capacity while alleviating the current bias against additional investment, 61/ it is equitable for some portion of the increased costs of future service to be borne by present ratepayers. As noted in Section III, in nations where utilities are nationalized, current tax revenues are available to finance public works designed to serve the future. The Commission foresees long-term benefits arising from inclusion of at least some CWIP in rate base that are sufficient to offset the short-term costs that wholesale and retail

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61/ The question of whether CWIP in fact encourages unwise managerial choices is a separate issue, discussed in Section IV.D., *infra*.

customers may experience. Moreover, CWIP may reduce the exposure of utilities to the vicissitudes of business swings which may threaten the ability of utilities to meet their public service obligations.

c. Analogy to Non-Regulated Industries

The third discrete issue relating to presumptions against CWIP in rate base involves the argument made by retail ratepayers and consumer groups that AFUDC is a preferable treatment for construction costs because it most closely replicates the way unregulated businesses, which do not have an obligation to serve as do regulated utilities, recover costs. These commenters therefore find CWIP in rate base objectionable because it contravenes the conventions of competitive markets in which construction financing costs are not charged to current customers. 62/ Moreover, these commenters view CWIP policy as removing risk which investors normally assume by shifting risk to ratepayers. It is argued that this makes ratepayers into involuntary investors in the utility.

In response to this defense of AFUDC, investor-owned utilities state that regardless of the rate policy, the electric utility industry is not comparable to a competitive market. They contend, for example, that (1) regulated entities base

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62/ In the NOPR, the Commission also stated: "The exclusion of CWIP from rate base also most closely duplicates the operation of an unregulated competitive market. In such a market, the price at which the company can sell the production of its existing facilities is unaffected by the fact that new facilities are under construction." 46 Fed. Reg. 39,448.

rates on costs, whereas supply and demand controls prices in a competitive market; (2) unregulated entities are not affected with the public interest and have no obligation similar to a utility's obligation to serve all customers within its service territory; (3) a utility must compete with unregulated companies for capital to construct new facilities in spite of the prospect of lower rates of return; and (4) while competitive markets price products at their current capital costs, generally approaching the full cost of marginal production, electric utilities price their power at average cost.

In the Commission's opinion, there are significant differences between free market operations and the conditions under which regulated utilities operate. Accordingly, it may not be fruitful to attempt to defend either AFUDC or CWIP policies on the basis of a similarity to competitive markets, and we decline to do so. What is important, however, is to enable the demand of customers for new capacity to be more accurately reflected in the planning forecasts of the utilities. A ratemaking approach such as AFUDC which shields ratepayers from the impact of higher cost capacity until it is completed cannot serve this goal.

2. Risk-Sharing Between Ratepayers and Investors

Commenters agree that inclusion of any amount of CWIP in rate base requires ratepayers to shoulder a financial risk generally only borne by investors, that is, the risk of supplying capital in anticipation of some return or benefit. However, the commenters disagree about the extent and significance of the shift. Currently, investors and ratepayers share some of the risks of public utility operations, for example, with respect to pollution control and fuel conversion facilities under the Commission's existing CWIP policy.

Wholesale and retail ratepayers state that investors should bear both the risk of the profitability of an enterprise and the risk that a plant might never be completed, thereby losing its potential to serve or produce revenues. 63/ These commenters urge the Commission to retain the status quo rather than force ratepayers to be involuntary investors. These ratepayers state that if investors are shielded from the risks of the enterprise, the market will be dramatically altered and will disrupt its efficient operation.

63/ Utilities and financial firms also address the question of the risk of noncompletion of a facility under construction. Under an AFUDC policy, utility investors recover, from ratepayers, capital and accrued AFUDC which is prudently invested in plants abandoned prior to completion. The final rule does not vary this result. The question of how delayed or deferred plant is treated under the rule is determined by whether delayed or deferred plant qualifies as plant under construction which is properly includable in Accounts 107 or 120.1. If CWIP is included in rate base, utility investors are nonetheless allowed to recover prudently invested capital. Because the carrying cost on the capital invested in the projects is recovered currently under a CWIP in rate base policy, a utility would be allowed to amortize only the principal.

In contrast, investor-owned utilities and financial organizations state that, even under a CWIP policy, most of the risks associated with a utility operation belong to the utility's investors; they are the principal source of capital for the utility. If CWIP were in rate base, these commenters state that ratepayers would only be required to pay financing costs on a current basis, and would not be obligated to invest capital in the utility. Utilities nevertheless claim that it may be appropriate and socially useful for ratepayers to assume some risks; this would reduce capital costs and the revenue requirement of the utility. Utilities generally believe that the obligation that a utility has to provide power within its service area, even when the economics of such service do not justify added investment, warrants having ratepayers assume a greater share of the associated risk.

It is important to differentiate the role of investor and ratepayer. Neither the proposed or final rules in this docket make ratepayers a primary source of capital. That is not to say, however, that regulated rates contain or should reflect only the value of providing an immediate benefit to ratepayers. Ratepayers, to a greater or lesser extent, have an interest in the financial health of companies charged with serving their needs.

The degree to which it is appropriate for ratepayer funds to be used to help finance the construction of plant for future use is a matter of judgment. The Commission believes that ratepayers should share with investors today the carrying costs of plant under construction. This is, as some commenters point out, analogous to the universal support given public schools through taxes, regardless of whether one is the parent of a student or the likelihood of remaining in the district. Risks and benefits are shared throughout the community at large.

CWIP in rate base does not portend any fundamental realignment of the roles of investors and ratepayers. Regulations must nevertheless recognize certain economic and technical facts of life that make it more difficult for utilities to plan and finance capital investment over long periods of time, including high capital costs, the prospect of demand growth, and protracted construction times. In light of the tendency of utilities to seek short-term and probably ineffectual solutions, the Commission views CWIP in rate base as a balanced and modest means of sharing the risks inherent in the need for adequate future capacity.

3. The Financial Distress Standard for Inclusion of CWIP in Rate Base

In FPC Order No. 555, which established existing § 2.16, the Commission adopted a policy that permits inclusion of CWIP in rate base for any electric utility that makes a "clear and convincing" showing of severe financial difficulty. Although the financial conditions of the electric utility industry weakened in recent years, few utilities have filed requests for CWIP rate relief under the severe financial distress standard and no final order granting CWIP under this standard has ever been issued. Although a major alternative proposed in this docket involved a threshold criteria for CWIP eligibility predicated on a utility's financial condition (e.g., bond ratings), the rulemaking also called into question the viability of the severe financial distress standard.

In response to that proposal, commenters dispute whether such a standard is serviceable. Investor-owned utilities and financial firms state that such a test fails to provide timely relief to an ailing utility and permits substantial financial deterioration before relief is available. Moreover, the severe financial distress standard limits relief to particular utilities.

Wholesale and retail ratepayers generally support the retention of a financial distress test, primarily because some test ought to be imposed before any extraordinary rate relief is afforded utilities. They argue that CWIP relief is a last resort and that any relaxation of the severe financial distress standard would undermine that purpose. These commenters therefore advocate case-by-case determinations for any rate relief, as necessary to preserve the financial integrity of a utility. Generally speaking, ratepayers view any rule that includes CWIP in rate base generically as an unwarranted departure from the present policy, the merit of which is purportedly demonstrated by the paucity of CWIP rate requests made under § 2.16 and the precision of judgment which a case-by-case method permits.

In short, these commenters questioned the need for a broader rule allowing CWIP in rate base. Indeed, upon reviewing the final rule we adopt today, these commenters will likely ask: when only a handful of utilities have even requested CWIP under the current rules, on what basis does the Commission allow all utilities to file to include CWIP?

The answer is straightforward. At the time the existing rule was proposed, the primary concern was with providing a vehicle for rate relief to utilities that faced such financial distress. In the ensuing year and a half, however, we have gained a much better understanding of the effects of AFUDC treatment on utility financing, the investment bias created by inadequate returns and the unnecessary future costs which may be imposed by decisions reflecting that bias. At the same time, each cancellation of a power plant on which substantial investment has already been made has underscored the extent to which past price signals for electric power have distorted estimates of future demand and contributed to faulty planning.

These are the primary concerns for the future. Our purpose in this rule is thus considerably broader than merely providing rate relief for utilities in a financial bind. Accordingly, the paucity of requests for CWIP under the existing rule does not itself argue against the course we adopt today.

4. Inclusion of CWIP in Rate Base Subject to Refund

Under the Commission's existing regulation, CWIP for pollution control and fuel conversion facilities may be collected subject to refund, just as other rate base items. An allowance of additional CWIP under the financial difficulty test, however, may be included in rate base only following the Commission's final order on the proposed rates and the ensuing litigation over the meaning of financial distress and the nature of appropriate relief. Investor-owned utilities, several state regulatory bodies, and an accounting firm state that CWIP should be included in rate base at the time rates become effective, even if made subject to refund. These commenters argue that the refund obligation relating to CWIP should be the same as that established for the rate filing generally. To delay collection of CWIP-related expenses would allegedly be counter-productive with respect to the financial problems CWIP is intended to alleviate.

Wholesale customers generally disapprove of CWIP collected subject to refund. Several commenters state that allowing CWIP in rate base subject to refund would result in a price squeeze and litigation that could leave the "squeezed" customers financially devastated before a refund based on price squeeze would be made. In other words, these commenters fear that rates may be collected subject to refund for years until a final decision is issued by the Commission. Several partial remedies are proposed by the commenters, such as segregating the CWIP portion of rates collected subject to refund for accounting purposes, repaying a customer for any CWIP contributions if that customer leaves the service territory during the period that rates are collected subject to refund, allowing CWIP in rate base subject to refund only after the initial decision of the administrative law judge, or expediting that portion of any rate proceeding that involves CWIP in rate base in order to to minimize the retail impact.

As a matter of policy, the Commission will allow utilities to collect CWIP-related revenues even if rates are subject to refund in order that relief be immediately available to companies with larger construction programs 64/ and concomitant capital needs and that cash flow rates achieve more stability over time. After all, two of the main objectives of allowing CWIP in rate base are, first, to prevent unpredictable steep jumps in wholesale rates and, second, to provide consumers with more timely signals about the real cost of every additional

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64/ Several commenters question the effect of the final rule on potential price squeeze situations. Although more will be said about price squeeze later, there is no indication that this final rule will dramatically exacerbate the possibility of such discriminatory rate structures. See the Environmental Assessment at § 4.2.5. It appears that CWIP does not generally create price discrimination where it does not otherwise exist although, as the percentage of CWIP in rate base increases, the greater the likelihood of some price discrimination.

increment of power used. These objectives argue for continuity in including CWIP in rate base as close to when costs are incurred as possible. Moreover, by allowing CWIP subject to refund, utilities will find frequent filings less necessary. Finally, the Commission recognizes the surface appeal of the equity notion of refunding CWIP contributions to those parties leaving the systems before a plant becomes operable. Its impracticalities notwithstanding, the Commission does not view the rates that might be paid for future utility plant as fundamentally different than rates for other costs that the utility incurs in the course of maintaining healthy, ongoing operations.

D. Impact of Including CWIP in Wholesale Rate Base

The final rule will affect the financial condition and investment decisions of utilities. In addition, a 50 percent CWIP policy will likely be reflected in actual rates fairly quickly as a result of our decision to allow CWIP-based rates to be collected subject to refund. Accordingly, we evaluate the actual impact this rule may be expected to have on wholesale rates. While the following analysis will help put the Commission's decision in perspective, it is essential to remember that the impacts to which the Commission looks are not merely dollars and cents effects, but behavioral changes in utility operations, capital markets, and power consumption. We have sought answers to these difficult questions in the comments submitted in this proceeding as well as in our own detailed analyses. While the following discussion summarizes much of this information, we emphasize that we have reviewed all of the analysis in the comments on these difficult questions.

1. Impacts on Utilities

a. Cash Flow

The final rule will allow utilities to include up to 50 percent of CWIP in rate base and effectively to convert a proportionate amount of current paper earnings, included as AFUDC, into cash earnings.

Investor-owned utilities state that CWIP increases cash flow, thereby improving the ability of utilities to undertake and complete needed construction programs. They contend that the increased cash flow will be exhibited in higher interest coverage ratios 65/ and other financial statistics relied upon by investors and rating agencies in evaluating the creditworthiness of a utility. According to this view, the increased cash flow will improve flexibility in financing as the industry's dependence on external capital markets is reduced and will

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65/ An "interest coverage ratio" is earnings before taxes and interest expenses divided by interest expenses. Its significance is that the ratio is a widely-used measure of how utilities are able to meet one particular cash flow requirement, namely, interest expense. The ratio is critical to financing because trust indenture provisions applicable to the utilities commonly prohibit the issuance of new long-term debt unless the interest coverage ratio is maintained at or above a specified minimum level, typically 2.0.

therefore reduce financing costs. Moreover, as cash flow improves, debt investors are said to face a lower risk of default and common stock investors are more assured that dividend payments will be maintained.

In contrast, several wholesale customers and a trade association state that, because the Commission regulates a small proportion of total utility rates, inclusion of CWIP in rate base will not result in an appreciable increase in cash flow. For example, the association states that, because one-half of the utilities with bond ratings of BBB+ or below derive less than four percent of their revenues from wholesale transactions, the financial impact on this substantial portion of the industry as a result of CWIP in rate base will be minimal.

The statistical record in this proceeding on how CWIP in rate base affects utility cash flow can be summarized as follows. The utility impacts of including CWIP in rate base are presented in five statistical studies, two of which deal with initial financial impacts on actual utilities and three of which simulate the impacts on hypothetical companies over a much longer period. The initial effects on 50 electric utilities of including all CWIP in rate base are also estimated by one utility commenter 66/ in terms of three financial parameters -- interest coverage, internal cash flow as a percent of construction expenditures, and percent change in external financing requirements.

66/ Appalachian Power Co., et al., Reply Comments at Appendix D.

The latter study shows that the average pre-tax interest coverage ratio (excluding AFUDC) would have increased in 1980 from 1.99 to 2.93 if 100 percent of CWIP balances had been included in rate base. A similar improvement is shown with 1979 data. Moreover, the study shows that 30 utilities with interest coverage ratios of less than 2.0 under an AFUDC policy would have improved coverages to greater than 2.0 with 100 percent CWIP in rate base. The study also shows that the ratio of internal cash flow (excluding dividends) to construction expenditures would have increased, on average, from 29 to 44 percent in 1980. Also, 16 of the 17 companies in the sample with a ratio of internal cash flow (excluding dividends) to construction expenditures below 20 percent would increase to above 20 percent with the inclusion of 100 percent CWIP in rate base. Finally, this study finds that if all CWIP had been included in rate base, external financing requirements would have been reduced by about 23 percent in 1980. The stated reasons for this significant reduction are that CWIP in rate base improves the utilities' ability to meet current expenses through cash flow and that this reduces their dependence on external sources of capital.

A wholesale customer 67/ presented a statistical analysis of initial financial impacts of including 100 percent CWIP in rate base on 42 utilities with bond ratings of BBB/Baa as of

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67/ Oglethorpe Power Corp., Initial Comments at 24 and Exhibit SEC-5.

1979. The study concludes that these utilities would realize only a 1.5 percent increase in cash flow when both jurisdictional and non-jurisdictional portions of the utility's operation were combined. This conclusion is based on a comparison of the increased cash flow derived from allowing CWIP in jurisdictional rates to the cash needs of the entire company, including those associated with non-jurisdictional services. The small increase in cash flow shown is considered by this commenter too insignificant to support the contention that any utility will be substantially better off with CWIP in rate base.

The simulation analyses evaluate the long-term financial impacts of including zero and 100 percent CWIP in rate base. 68/ One study, presented by an investor-owned utility, considers three scenarios applied to a "strong" (AA-bond rated) utility and a "weak" (A-bond rated) utility: (1) no CWIP in rate base and attrition of earnings; (2) 100 percent CWIP in rate base and attrition; 69/ and (3) no CWIP in rate base, no attrition, and a higher allowed/earned rate of return. Both utilities are assumed to be engaged in construction programs to complete five 750 MW coal-fired plants and to begin two more

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68/ See Appalachian Power Co., et al., Initial Comments, at Appendix H, Reply Comments, at Appendix C; Edison Electric Institute, Reply Comments, at Appendix V; Eugene F. Brigham, Public Utility Research Center, University of Florida, Initial Comments, at page 17. (The results of the University of Florida study are very similar to that derived by the Appalachian and Edison Electric studies and are not discussed in the text.)

69/ Under the 100 percent CWIP case, the study assumes a reduction in the cost of capital for both utilities.

plants over a 20-year study period. Under the first scenario, where CWIP is excluded from rate base and there is continued attrition, the study concludes that over the study period, the "strong" utility would experience a decline to a BBB bond rating. In this case, interest coverage (excluding AFUDC) drops from an average of 2.45 in the first five years to an average of 1.83 in the last five years. The ratio of internal cash flow to construction expenditures also falls dramatically and there is significant dilution of common equity. A similar experience is forecasted for the "weak" (A-rated) utility. In contrast, under the second scenario, if 100 percent CWIP is included in rate base and attrition continues, both utilities are projected to maintain their initial bond ratings. The "strong" utility would generally maintain an average interest coverage of 3.34 over the 20-year study period and internal cash flow as a percent of construction expenditures would average 62 percent compared to 41 percent without CWIP. Comparable results are forecasted in terms of maintaining a higher interest coverage for the "weak" utility. The third scenario involves higher rates of return. Although this alternative tends to increase cash flow and interest coverage, the improvement is less than that which occurs under the second scenario.

An investor-owned utility trade association study estimates the effects of 100 percent CWIP on two hypothetical utilities that are undertaking what is assumed to be representative multi-project construction programs. The hypothetical utilities vary in size and in the technology mix of existing plants. The study does not assume a reduction in the cost of capital when CWIP is included in rate base. Consistent with the utility simulation study, this study finds that, without allowing any CWIP in rate base, interest coverage ratios for these companies were not maintained at the 2.0 minimum level (for issuance of new debt) for the entire study period. However, inclusion of 100 percent of CWIP in rate base maintained the ratio above the minimum level. The study also finds that, if all CWIP is included in rate base, the percent of external financing decreases and the quality of earnings (measured by the ratio of AFUDC to net income) improves.

Tables 1, 2, and 3, attached as Appendices to this rule, are graphic illustrations of the results of two additional studies, one conducted by the Energy Information Administration (EIA), the other by FERC staff, 70/ which confirm the findings of the studies described above, i.e., that inclusion of 50

70/ The FERC model was issued for public comment in "Proposed Computer Model for Evaluating Impact of Alternative CWIP Policies and Staff Study on Cost of Capital," (Docket No. RM81-38) 46 Fed. Reg. 58,148 (November 30, 1981). The Commission also identified the input data which would be used for this model. This model has been adapted to estimate impacts under a 50 percent CWIP in rate base approach. See also Environmental Assessment, supra, at §§ 4.2.2, 4.4.

percent of CWIP in rate base would measurably improve the jurisdictional portion of utilities' internal cash flow and interest coverage ratios. 71/

The Commission finds that the CWIP policy presented in the final rule will have a salutary effect on cash flow. No commenter disputes that the inclusion of CWIP in rate base will increase cash flow. Only the extent to which cash flow will increase is at issue. The Commission believes that the resolution of this issue must be determined with respect to the effect of including CWIP in rate base on the jurisdictional portion of a utility's operations, as if the federally-regulated portion of the utility's operations "stand alone." The Commission's decision to alter its existing CWIP policy should not be dependent on the limited extent of its jurisdiction over most utilities. The assertion by investor-owned utilities that cash flow will be significantly improved appears to be correct, at least with respect to the jurisdictional portion of the utilities. The objection to CWIP put forth by wholesale customers that the size of the federal jurisdiction over BBB rated utilities augers for only limited impacts, is, therefore, somewhat wide of the mark.

71/ With regard to the wholesale customers' estimated 1.5 percent increase in cash flow, the Commission believes that, if the increase were related to an estimate of the jurisdictional portion of cash flow, the percent increase would be much higher. *See* discussion below.

In general, the simulation studies confirm the Commission's expectations regarding the effect that CWIP in rate base has on cash flow and other financial indicators. The studies are useful in evaluating the relative magnitude of the financial impacts of including CWIP in rate base. However, since they are based on 100 percent CWIP in rate base, they overstate the likely impact of including 50 percent of CWIP in rate base by a factor of two. By taking only half of the increase in cash flow and converting this into interest coverage ratios, and other financial measures, one can ascertain the effect of 50 percent of CWIP in rate base. Under a 50 percent CWIP case, the effect on cash flow, interest coverage ratios, etc., is still significant.

In sum, there is convincing evidence in the record including a study prepared by the FERC and a study prepared for the Commission by EIA which shows an increase in cash flow from including 50 percent of CWIP which is sufficient to affect most utility financial indicators in a very positive fashion.

b. Cost of Capital

The projected increase in cash flow and reduction in external financing requirements relates to the second major direct financial consequence of CWIP in rate base, namely, the impact on the cost of capital to utilities. Commenters present and analyze numerous studies on the effect of CWIP on the cost of capital. Investor-owned utilities present studies which support the hypothesis that CWIP in rate base reduces capital costs. Wholesale electric power customers present analyses showing the contrary position. As one might suspect, there are strengths and weaknesses in all of the empirical analyses of this issue, thus indicating the elusiveness of any definitive answers. The studies supported by investor-owned utilities conclude that: (1) AFUDC accounting tends to depress market-to-book ratios of electric utility stocks; and (2) putting CWIP into rate base clearly improves the financial integrity of utilities and lowers capital costs.

Wholesale customers and their trade associations present three of their own analyses which conclude that: (1) empirical evidence does not support the conclusion that AFUDC earnings make utilities more risky as investments; (2) a quality-of-earnings index based upon AFUDC showed no significant effect on the cost of capital in eight out of 10 years studied; and (3) if dividend payments are available in the proper magnitude, investors are relatively unconcerned about AFUDC amounts.

All of the cost of capital analyses have some common weaknesses, such as the failure to adequately separate the effects on riskiness of a construction program from the effects of the CWIP policy. These studies offer conflicting and widely diverging estimates of the cost of capital effects of CWIP in rate base. The investor-owned utilities' studies estimate that debt costs will be reduced by up to 100 basis points and equity costs by up to 300+ basis points.

The studies rely predominantly upon the ratio of AFUDC to net income as a measure of the effect that the inclusion of CWIP in the rate base would have on utilities. These studies rely upon the ratio of AFUDC to net income because, all things being equal, as the investment in plant under construction increases, this ratio rises. Since utilities are affected with the public interest, their obligation to serve drives the need to construct facilities even when such investment may not be economic from the investors' standpoint. This measure, however, has some major shortcomings. For example, it may more accurately relate to the relative size of a company's construction program rather than to whether CWIP is included in rate base. As a result, the studies may merely be reflecting that as the size of a company's construction program increases the company becomes more risky from an investor's perspective. The AFUDC to net income ratio may also be questionable because two companies with identical construction programs and CWIP policies could have significantly different ratios due to (1) the use of a gross-of-tax AFUDC rate rather than a net-of-tax rate, or (2) significantly different earned returns on plant-in-service due to attrition.

Several commenters note, in reply, that the various econometric and statistical studies have shortcomings of a technical nature, such as a lack of independence among variables (i.e., multicollinearity). In addition, the studies extrapolate from historical data, and this may bias the results.

The Commission understandably finds it difficult to draw from the analytic studies submitted in this proceeding any definitive conclusions regarding the effect of a CWIP in rate base policy on the cost of capital. The cost of capital studies arrive at often contradictory results from what appear to be similar data bases and modeling techniques. Consequently, our conclusion, which is admittedly no more than a matter of judgment, is that we believe whatever the size of any effect that the inclusion of CWIP in rate base will have on the cost of capital, the rule will generally provide a downward pressure on those costs. 72/

c. Prudent Decisionmaking and Management Efficiency

Utility management decisions are constrained by both the financial condition of the utility and the regulatory atmosphere in which the utility operates. If a regulatory policy precludes a regulated utility from earning its cost of capital or maintaining an adequate cash flow, management may be inhibited

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72/ *See* n.20, *supra*.

from undertaking optimal construction projects, meaning simply that management may opt for short-term economies at the expense of effective long-range planning. [73] It is also conceivable that if a regulatory policy produces excess earnings a utility may be encouraged to engage in unneeded or uneconomic construction. Commenters discuss several of these countervailing aspects of the dynamics between management behavior and rate regulation.

Wholesale and retail customers generally express the fear that a CWIP policy will reduce management efficiency and will encourage the construction of larger and economically inefficient facilities. These commenters state that CWIP will not provide a sufficient incentive for utilities to complete projects quickly, efficiently, or to avoid unworthy projects because cost overruns and inefficiencies will be subsidized by the ratepayers. Rather wholesale and retail customers argue that the inclusion of CWIP in rate base serves to reward management inefficiencies.

Many consumers believe that utilities presently construct unnecessary or inefficient generation facilities and that CWIP will promote large scale, and in particular nuclear, construction programs instead of least-cost alternatives. They argue that inclusion of CWIP in rate base exacerbates this condition. Under this view, the burden of establishing management imprudence

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73/ See the Commission's discussion of this issue in Section III, *supra*.

with respect to a construction program would be shifted to the customer to a greater degree under a policy that routinely includes CWIP in rate base. Most customers, it is argued, do not have the resources or information to shoulder that burden. As a result, utility management would be insulated from challenges to the exercise of its discretion, its accountability will decline, and a major incentive for efficiency will disappear.

Several wholesale customers and consumer representatives argue that the efficiency of management and the need for the construction program should be examined in conjunction with all requests for inclusion of CWIP in rate base. One consumer group states that the consideration of management efficiency should focus on whether management is inflexible or short-sighted. Several wholesale customers stress the need for a thorough review of the economics of construction programs, including the likelihood that a plant will never be placed in service, before CWIP is allowed in rate base. These commenters generally agree that the rate case is the proper context for this inquiry. They conclude that CWIP should not be allowed in rate base if management is found to have acted imprudently with respect to the construction of new facilities.

In contrast, investor-owned utilities, DOE, and several financial firms state that a CWIP policy will actually improve management efficiency by freeing its hand to undertake optimal construction projects. DOE contends that, without CWIP, management will be constrained in raising debt and equity capital and in response will adopt a "capital averse" strategy. This strategy, DOE states, will not yield a least-cost result over the long-term. DOE states that its national load forecasts indicate that, with a modest upsurge, demand could outstrip capacity, especially in light of the increase in cancelled and deferred units.

Investor-owned utilities state that a CWIP policy will give management and investors sufficient confidence in a utility's financial ability to undertake needed investments. This will allow management to pursue an optimal expansion plan and undertake construction of efficient generation units. However, most investor-owned utilities state that a review of the utility's construction program is unnecessary in each rate case because each project is generally reviewed by state or federal agencies prior to commencement of construction. They argue that a review suggested by wholesale customers will impair the availability of CWIP and, based upon the experience under the existing regulations under § 2.16, would unnecessarily complicate and lengthen rate proceedings. Several investor-owned utilities acknowledge that a review of the construction program would not be inappropriate.

In response to this discussion, the Commission emphasizes that encouraging construction is not a goal of this rulemaking.

Rather, a CWIP policy should enable management to exercise its discretion in a prudent and rational manner. The present AFUDC policy, however, has not served the industry or its consumers well in this regard. A CWIP rule would allow management to make optimal decisions in light of market conditions, including projections of future demand.

The Commission finds no basis for the contention that CWIP will breed management inefficiency and encourage deliberate delays in construction times. There remain strong incentives for management to seek speedy completion of construction projects. For example, the cash flow to a utility for a completed plant far exceeds that for a plant under construction, even with a 50 percent CWIP policy. This occurs because a utility is able to depreciate only completed plants. In addition, once completed, 100 percent of the plant is included in rate base as opposed to the maximum of 50 percent under this final rule. Therefore, the Commission believes that a CWIP policy does not necessarily undermine existing incentives for management efficiency regarding construction projects.

That is not to say that the Commission need not consider management efficiency and the need for construction programs. A regulated utility is entitled to an opportunity to recover its prudently incurred costs. Allowing utilities to file to include CWIP in rate base neither adds to nor detracts from this fundamental rule of utility ratemaking. With the proliferation of construction projects and the elongation of construction cycles, management prudence loses none of its significance. However, since the prudence of investment decisions and associated costs is a matter of fact in each case, the Commission agrees with those commenters who contend that imprudently incurred costs reflected in CWIP may be disallowed on the same grounds as other imprudently incurred costs proposed for inclusion in rate base.

The final rule adopted will fundamentally reorient the Commission's assessment of the reasonableness of construction programs. It affords in effect an opportunity to review and judge the prudence of costs as those costs are incurred and claimed in rate base, rather than at a later point in time when a project is completed or abandoned and a potentially unwise investment has already been made.

To facilitate the review of the prudence of CWIP costs in rate cases, the final rule expands the filing requirements under § 35.13 of the Commission's regulations to require a general statement of the utility's program for providing reliable and economic power. While the filing required by § 35.13 is brief and will not obviate further data gathering, including discovery, Commission staff and intervenors will be better able to review the prudence of the construction and related costs that may be included in rate base.

In evaluating prudence, additional information, if reasonably available, may be called for. For example, staff or intervenors may request and be entitled to receive the utility's current plans for expansion by year; current and previous construction schedules and cost estimates for major projects; and annual summer and winter reserve forecasts (with available dependable capacity identified by plant and fuel type for internal generation and by source for external capacity). Additional relevant data could include the utility's current economic and financial studies (e.g., production cost simulations or load flow studies), along with technical and economic assumptions (including fuel costs and energy projections), which show the impacts of the utility's capacity and energy plan or which evaluate relative costs of alternative plans. If the filing utility does not have available any of the information specified, it shall submit instead any pertinent information upon which it relied in deciding to replace or expand its power supply facilities.

A finding of a market for power by another agency will, of course, be relevant to any such consideration although such findings seldom deal with prudence related concerns. If the Commission finds construction costs were not prudently incurred, disallowance of rate base treatment may be appropriate. 74/

74/ Absent a showing of inefficiency or improvidence, the Commission is bound to presume that the utility operations were conducted in good faith consistent with principles of "efficient and economical management." Bluefield Waterworks and Improvement Company v. Public Service Commission, 262 U.S. 679, 693 (1923); West Ohio Gas Company v. Public Utility Commission, 294 U.S. 63, 73 (1934).

There has been considerable interest expressed in recent years concerning "least-cost" energy strategies. 75/ The Commission understands a least-cost approach to mean one which seeks to provide reliable service over time at the lowest reasonable cost. 76/ This, of course, is one element of the prudence standard, and is entirely consonant with fundamental principles of public utility regulation. 77/ As such, we fully endorse the least-cost principle as one important component of a prudence determination and intend to apply it to reviewing claimed construction costs as we do to other claimed utility costs.

75/ *See e.g.*, Sant, *The Least-Cost Energy Strategy: Minimizing Consumer Costs Through Competition* (published by the Energy Productivity Center) (1979); Sant and Carhart, *et al.*, *Eight Great Energy Myths: The Least-Cost Energy Strategy - 1978-2000* (Energy Productivity Report No. 4 of the Energy Productivity Center) (1981). (Apparently, the terms "Least-Cost and "Least-Cost Energy Strategy" are trademarks of Applied Energy Services, Inc.) *See also* Hearings before the Subcommittee on Energy and Conservation of the House Committee on Energy and Commerce, 97th Cong., 1st Sess. (April 23, 1982).

76/ *See* our discussion of "least cost energy strategy" in Treatment of Purchased Power in the Fuel Cost Adjustment Clause for Electric Utilities, Docket No. RM83-62-000, Notice of Proposed Rulemaking, 23 FERC ¶ 61,171, at n. 11 (May 3, 1983).

77/ *See e.g.*, Midwestern Gas Transmission v. FPC, 388 F.2d 444, (7th Cir. 1968), *cert. denied*, 392 U.S. 928 (1968); Atlantic Refining Co. v. Public Service Commission, 360 U.S. 378, 388 (1959) (intent of Congress under Natural Gas Act that service should be provided at the "lowest possible reasonable rate consistent with the maintenance of adequate service in the public interest.").

The contention that the final rule will encourage management to overcapitalize (i.e., build too much capacity or generation plant of excessive size), the so-called Averch-Johnson effect, 78/ is similarly flawed. The A-J effect is said to occur if earned rates of return exceed the opportunity cost of capital. Except for the minor effects due to investment tax credits, as noted earlier in the preamble, allowing CWIP in rate base will have no effects on earned returns.

Many commenters that utilize this proceeding as a forum for criticizing nuclear power misconstrue the Commission's objectives. As previously stated, this rule seeks to mitigate the aversion to capital investment. The final rule should help create a more evenly-balanced environment for investment decisions. It follows that the rule will not encourage construction of any particular kind of generation facilities, including nuclear plants.

It is ironic that wholesale and retail customers find that an AFUDC policy provides greater incentives for completing plant under construction. In fact, the massive delays experienced in

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78/ Averch, H., and Johnson, L.L., "Behavior of the Firm Under Regulatory Constraints," American Economic Review, Vol. 52, (December 1962); See also Bailey, E.E., Economic Theory of Regulatory Constraint, Health-Lexington, 1973.

the construction of electric utility plant over the last decade have occurred in spite of an AFUDC policy being predominantly employed by both federal and state regulatory agencies. The Commission does not believe that a CWIP in rate base policy will cause further deterioration in this regard, but to the contrary finds that it will provide the necessary capital which may permit faster completion of major projects.

In any case, utility management will be held accountable for the prudence and costs of its construction programs. Both federal and state regulatory procedures provide safeguards for consumers from management imprudence. In fact, the Commission has the authority to disallow the recoupment in rates of higher costs incurred as a result of negligence, mismanagement or inefficiency. 79/ The new rule will enable the Commission to consider the prudence issue earlier in a construction program than under an approach that only permits capitalization of AFUDC prior to a plant's in-service date. 80/

79/ See Opinion No. 118, Virginia Electric Power Company, 15 FERC ¶ 61,052, 61,112 (1981), citing Public Service Company of New Hampshire, 6 FERC ¶ 61,299 (1979).

80/ Moreover, the requirements of new Statement BM will permit consideration of the reasonableness of the filing utility's construction program earlier in most rate proceedings.

2. Impact on Consumers

a. Rates

The rate impact of including CWIP in rate base will vary among utilities, regions of the country, and over time. However, commenters attempted to portray the overall effects of a change in CWIP policy. Predictably, commenters do not always agree. Wholesale and retail consumers generally state that rates based in part on CWIP will be higher in the foreseeable future and may be higher than rates under an AFUDC policy indefinitely. Investor-owned utilities state that, although short-term rates would be higher, rates will decline sufficiently over time to offset (in terms of economic value) the short-term rise in rates.

The trade association of municipal utilities analyzes the short-term impact of including 100 percent CWIP in rate base on jurisdictional rates. [81] The study uses industry aggregate data for 1980 and assigned the FERC jurisdiction over 10 percent of the industry. The study estimates that aggregate impact on jurisdictional revenues would have amounted to $1.17 billion for 1980, if 100 percent CWIP had been included in rate base. A group of wholesale customers prepared a similar analysis, using 1979 aggregated data for the 42 utilities whose bonds were rated BBB/Baa. 82/ Under this analysis wholesale customers found that a 100 percent CWIP policy would increase rates initially by an average of 17.4 percent.

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[81] See American Public Power Association, Initial Comments, at 45.

Another study prepared by the trade association of investor-owned utilities simulates the effect on rates of two hypothetical utilities of including 100 percent CWIP in rate base. 83/ The two utilities differ according to financial resources, technology, and the mix of existing generation plants. The study concludes that inclusion of 100 percent CWIP in rate base would typically result in initial rate increases of less than 10 percent and, over time, lead to rates that fall below AFUDC-based rates.

The Commission finds that these analyses are not unreasonable, given their intended purpose of evaluating the rate impact of a 100 percent CWIP policy. However, this approach necessarily overstates the impacts that could be expected from the final rule. If 50 percent of CWIP were included in rate base, the impacts found in these studies would be essentially half those predicted. However, since the amount of CWIP which may be included in rate base is further limited in the initial years following the effective date of the final rule, these effects will be further restrained at the outset. The final rule phases-in the amount of CWIP allowable in rate base over a

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82/ See Oglethorpe Power Corp., et al., Initial Comments, at 24 and Exhibit SEC-5.

83/ See Edison Electric Institute, Reply Comments, at Appendix V.

two-year period by limiting the rate impact associated with CWIP to six percent in the first year and an additional six percent in the second year. Thereafter, a utility may include up to 50 percent of all CWIP in rate base. This initial limitation on CWIP in rate base ensures that, in those instances in which utilities have disproportionately large construction programs, the initial impacts of the final rule on consumers will not be severe. 84/ The Commission's analysis indicates that, without the initial rate increase ceilings, there would be some cases in which relatively large amounts of CWIP costs could initially be included into rate base. Most utilities have modest amounts invested in ongoing construction and will

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84/ In the Notice of Proposed Rulemaking, the Commission delineated four factors relevant to determining whether the amount of CWIP allowed in rate base under the proposed mechanical rule should be reduced or phased-in. See 46 Fed. Reg. at 39,455. These considerations, which could involve protracted case-by-case review, are short-term rate impacts, price squeeze, management prudence, and the need for power. In response to this proposal, several investor-owned utilities and an accounting firm state that such an open-ended provision would subject requests for CWIP in rate base to a volume of challenges that would deter utilities from even requesting CWIP. However, some utilities recognize that a phase-in of any CWIP relief would reduce the immediate rate impact and would provide a smoother price path with more predictable rates. Wholesale customers state that the four bases for limiting CWIP in rate base should be retained if the final rule does not provide a case-by-case determination of the CWIP request. The final rule provides expressly for an initial limit on rate impacts. The other factors are provided for in the course of Commission proceedings (e.g., price squeeze and prudence considerations).

be able to include the maximum allowable amount of CWIP in rate base without approaching the rate increase limitation in the rule. 85/

If all utilities subject to the Commission's jurisdiction received the maximum rate base treatment of CWIP permitted by the final rule (absent any six percent initial limitation), the the study submitted by the municipal trade association suggested that the resulting rate impacts would have been $580 million As a percentage of 1980 wholesale revenues ($9.71 billion), this would have amounted to a rate increase of less than 6 percent to affected customers, less than the limitation which the Commission imposes under § 35.26(d) on utilities individually. Under the 50 percent CWIP in rate base approach adopted in the final rule, the impact on the sample of 42 BBB/Baa rated utilities analyzed by the other wholesale customer group would have been 8.7 percent. Under the study supported by investor-owned utilities through their trade association, the initial rate increase, assuming 50 percent of CWIP in rate base, would have been less than 5 percent on average. 86/

85/ *See* Table No. 4 of the Appendix to this rule.

86/ On average, the long-term impact estimated in the investor-owned utilities trade association study is unclear. That study finds that CWIP-based rates will fall below AFUDC-based rates but does not present any time series on these prices. The conclusion that CWIP-based rates will be lower in the long-term is supported only by present value analyses which, in turn, are based upon evaluating rates beyond the period during which plants were being constructed. The Commission is thus able to ascertain whether their conclusion is based upon the assumed reduction in construction activity or whether CWIP-based rates fall below AFUDC-based rates even if there is a continuation in construction.

These projected rate increases do not, of course, reflect the 6 percent limit on CWIP-related rate increases for individual utilities. This limitation is established in order to restrain any severe effects that could be experienced in the early years of the new rule due to the potential inclusion in rate base of large amounts of CWIP previously excluded from rate base. In the first two years under the rule, CWIP-related rate impacts are limited to six percent annually. The results of all the studies submitted by commenters also presuppose that the utilities will file immediately to include a maximum allowable amount of CWIP in rate base. The prospect for this is by no means certain. In sum, the wholesale customers and investor-owned utilities trade associations' studies, if similarly adjusted for a policy of 50 percent of CWIP in rate base generally reflect rate increases of between five and six percent. The more limited sample used by wholesale customers which yielded an adjusted impact of 8.7 percent is an abberation because BBB/Baa rated utilities are not representative of the industry. Nonetheless, the three studies yield roughly similar estimates of initial rate impacts. Methodologically, there may be other ways of ascertaining the relative value to consumers of CWIP and AFUDC policies, as the commenters suggest.

Utilities and their customers hotly debate the impact of CWIP in rate base in terms of whether CWIP in rate base is less costly to ratepayers than the accrual of AFUDC under a present value analysis.. Present value analysis is a means of evaluating the relative value of alternative investments where differences exist in the time pattern of cash flows. It takes into consideration the time value of money -- i.e., that a dollar now is worth more than a dollar some time in the future -- by discounting the cash flows with a discount rate reflecting alternative uses of money. This analysis is typically performed to ascertain the value of the revenues paid to utilities by consumers both with and without CWIP in rate base. Depending on whether the present value of revenue requirements with CWIP in rate base is less than, greater than or equal to that without CWIP in rate base, consumers should (solely on the basis of cost) prefer, not prefer or be indifferent to CWIP being included in rate base.

For the most part this debate has centered upon the appropriate consumer discount rate to use in evaluating the required revenue streams. In this respect, commenters argue whether the rate should reflect returns available to consumers on high risk (speculative investments) or low risk (passbook savings), and on large or small-sized and on long or short-term investment alternatives. They debate whether these alternative returns should be placed on a before or after-tax basis. In general, wholesale customers tend to argue for factors that support the use of a high consumer discount rate while utilities argue towards a low discount rate. Some commenters further question the feasibility of establishing a single rate that could reasonably represent the interests of the spectrum of ratepayers affected by a CWIP policy.

Comments from both utilities and customers contain present value analyses for single projects using varying discount rates which yield conflicting conclusions. A number of commenters point out that, assuming no cost differences between the two policies (such as a lower cost of capital), consumers would be indifferent to the policies assuming their discount rate was equal to the utility's after-tax cost of capital. With a discount rate below the utility's after-tax cost of capital, consumers would prefer CWIP in rate base over the capitalization of AFUDC, and would not prefer CWIP in rate base if the consumers' discount rate is higher. Further, if the inclusion of CWIP in rate base reduces some costs, such as capital costs, the discount rate that would make consumers indifferent to CWIP or AFUDC may be lower than the utility's after-tax cost of capital. 87/ Some wholesale customers also argue that present value analyses assume that customers remain on the system throughout the operating life of the plant. Otherwise they would not receive the full benefits of lower prices during the operating life.

Some wholesale customers comment that it is more appropriate to evaluate present value in the context of a utility involved in multiple construction projects over time. One

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87/ This is consistent with a FERC staff study. See "Proposed Computer Model," supra.

commenter submitted a study that it claims shows that, under certain conditions, the present value of CWIP-based revenue requirements will exceed the present value of AFUDC-based revenue requirements. 88/ This study finds that, as long as either the nominal percent growth in CWIP (reflecting growth as a function of physical growth and inflation), or the consumers' discount rate is greater than the utility's after-tax cost of capital, the present value of CWIP-based revenue requirements will exceed the present value of AFUDC-based revenue requirements. Under these circumstances, this study concludes that consumers would be penalized if CWIP were included in rate base. The commenter alleges that the conditions for this occurrence are fairly likely but presented no support for this other than citing the hypothetical values used in the 1978 study.

The utility trade association 89/ responds to this study by arguing, on various grounds discussed above, that the utility's cost of capital exceeds the consumers' discount rate. Further, this commenter states that it is not logical to expect that the growth rate in CWIP will exceed a utility's cost of capital forever, as the study assumes. Data is presented for

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88/ Oglethorpe Power Corp., *et al.*, Initial Comments, at 34 citing Livingston and Sherall, *Construction Work in Progress in the Public Utility Rate Base: The Effects of Multiple Projects and Growth*, 8 Fin. Mgmt. 1 (1979).

89/ Edison Electric Institute (EEI), Reply Comments, at Appendix III.

the 11 largest bulk power suppliers to REA borrowers which shows, among other things, that seven of the 11 exhibited negative growth in CWIP for at least one year of the last five.

The Commission finds merit in the arguments on both sides of the issue of the present value of CWIP-based versus AFUDC-based rates. For example, the range of reasonable consumer discount rates is arguably wide since the customers affected by the rule are diverse. Some positions are persuasive. For example, the Commission agrees with the wholesale customers that single project analyses may be misleading since most utilities are continuing to add facilities over time and customers pay rates based on the appropriate share of all of a company's power supply facilities. A present value analysis should reflect whole company or industry conditions, including growth in capital investment.

Rates that include CWIP in rate base may eventually fall below AFUDC-based rates for some companies and thus be less costly for their consumers (as a group) than AFUDC-based rates, on the basis of present value analysis. However, this eventuality will depend on the pattern of investment of each utility, as well as such factors as efficiency gains and rates of return. 90/

90/ In this connection, the Commission believes that EEI is in error when it states that growth rates in CWIP must always exceed the utility's after-tax cost of capital in order that the present value of CWIP-based revenue requirements exceed that of AFUDC-based revenue requirements. While a drop in growth for one year may cause CWIP-based rates to fall temporarily below AFUDC-based rates, average CWIP-based rates may remain above AFUDC-based rates as long as the average growth rate exceeds the utility's after-tax cost of capital.

For the industry as a whole, the Commission believes that, under plausible assumptions of future demand growth and inflation, 91/ CWIP-based rates may remain somewhat higher than AFUDC-based rates for the foreseeable future. This conclusion is based on a comparison of rates made in terms of absolute dollars. Assuming CWIP-based rates are slightly higher for the foreseeable future, as the Commission concedes is plausible, no present value analysis will show that CWIP-based rates are less costly to customers than AFUDC-based rates, regardless of the consumer discount rate utilized. 92/ Accordingly, it is not necessary for us to attempt to resolve the difficult question of the appropriate consumer discount rate. With respect to the separate question of how large the difference between CWIP-based rates and AFUDC-based rates may be, however, the Commission turns to analyses that are based on the absolute dollar levels of these rates that provide a clearer picture of probably future rate impacts.

The Commission had independently analyzed the rate impact of a 50 percent CWIP policy in two studies. In one study (the FERC staff study), a model 93/ is used to calculate the initial-year rate impacts of a 50 percent CWIP policy on 141 electric

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91/ See Section III, supra, and Chart No. 1, infra.

92/ Present value analysis has other limitations. It measures value only in terms of the cost of money discounted to present value. Present value analysis does not account for occurrences, such as efficiency gains or enhanced reliability, that may cause CWIP-based rates to benefit consumers in other ways.

93/ See Proposed Computer Model, supra; see also the Environmental Assessment § 4.1.2.

utilities. The FERC study produced initial-year rate impacts for individual utilities by computing the incremental effects on rates, cash flow, and certain financial rates that would occur if 50 percent of CWIP were included in rate base. The first year rate impacts calculated are an average increase of 4.70 percent with a standard deviation of 4.04 percent. This analysis did not incorporate the initial rate impact limitation provision of the final rule based upon a maximum rate increase of six percent in each of the first two years of the rule's effectiveness. When the six percent ceiling is considered, the average initial price increase to affected customers predicted by the FERC study is reduced to 3.57 percent. The distribution of rate impacts for the 141 utilities studied indicates that the great bulk of utilities would experience a very modest initial increase in rates although four individual utilities could experience initial year increase in jurisdictional rates on the order of 16 or 17 percent absent the 6 percent limitation. The distribution of these impacts is presented in Table 4. The FERC study indicates that, even with a 6 percent limitation on rate increases for the first two years, all jurisdictional utilities would be eligible for the maximum 50 percent CWIP in rate base by the end of the third year.

The second study of the rate impact of including 50 percent CWIP in rate base is the EIA study. The study estimated national and regional average price impacts of a 50 percent CWIP policy (without the phase-in provision) for the period 1982 to

1995. It found that the increase in prices attributable to including CWIP in rate base would be greatest in the early years and diminish over time (see Chart No. 1 below). While this trend is predicted for each of the regions and nationwide, the level of rates would vary among regions.

CHART NO. 1

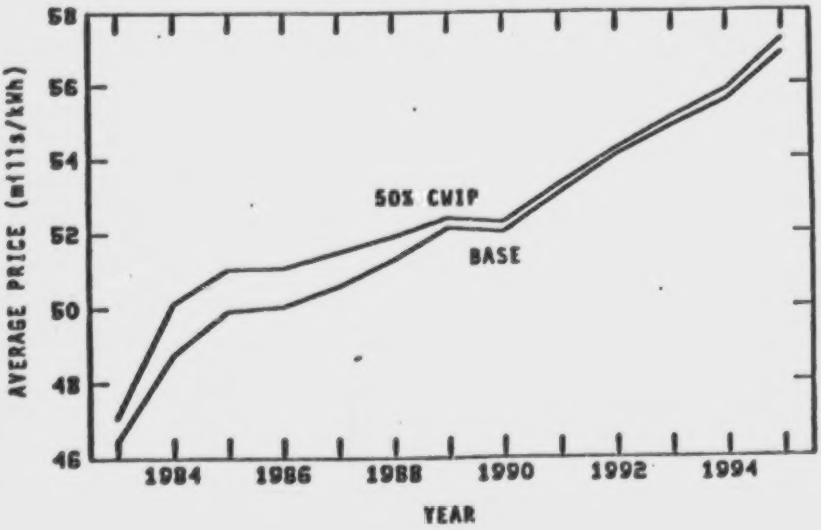

Figure 4.1. Real Price of Electricity: National.

The Commission believes that the methods and assumptions used in the EIA Study bias the initial impacts downward but that the nationwide impact estimates for 1985 and beyond are probably reasonable. The FERC model probably provides more accurate estimates of initial impacts and these impacts are consistent with the results of the studies submitted by commenters.

While in some regions, according to the EIA Study, CWIP-based rates fall below AFUDC-based rates prior to the end of the study period, as shown in Chart No. 1 no crossover was predicted for the nation as a whole. The lack of a crossover point results from the assumptions built into the model regarding growth in capacity additions, inflation, and cost of capital. Given the small difference between CWIP-based rates and AFUDC-based rates beyond 1990, it would appear reasonable to presume that some combination of relatively small reductions in growth rates, inflation or capital costs below those assumed in the model would result in a crossover.

It may well be that, with more accurate price signals, more accurate forecasting, and more efficient construction planning made possible by this rule, the nationwide average rates under this rule by 1990 will in fact fall below those that would result if no change were made. But we are prepared to proceed even if they do not, particularly in view of the generally modest rate impact which this rule may be expected to generate. The reason, as stated in Section III above, is that our regulatory responsibility is both to protect the ratepayer from high rates, while at the same time ensuring that utilities will continue to provide economic and reliable utility service, now and in the future. Accordingly, even if rates are somewhat higher over time under the final rule, the Commission believes that the rule is in the public interest because it will enhance the quality and reliability of service and the more efficient use of our nation's scarce capital and natural resources.

b. Consumption; Price Signals

The inclusion of CWIP in rate base has the potential to affect the management practices of utility companies. It also has another significance for economic behavior -- that is, it may affect how ratepayers use and pay for power. Commenters dispute whether the inclusion of CWIP in rate base provides ratepayers with more accurate signals about the real cost of power than does an AFUDC policy. Investor-owned utilities and their trade association state that electric rates which are based on substantial amounts of the old plant, and which often cost a fraction of the new plant do not account for the utility's plant under construction, and do not reflect the true cost of providing service. This view suggests that an AFUDC policy leads ratepayers to think that electric power is and will remain less costly than is the case at any one time. An industry observer states that partly as a result of an AFUDC policy, electricity is currently priced at 70 percent of its actual marginal cost. This commenter concludes that rates that do not reflect marginal costs incorrectly signal consumers as to both present and future cost of electricity. These inaccurate price signals perpetuate excessive use of electric power, artificially inflates demand, and defeats conservation objectives.

In response to the contention that CWIP provides more accurate price signals, wholesale customers state that an AFUDC policy provides the more accurate price signals. Wholesale customers raise two points in this regard. First, they argue that the facility under construction will generally operate at a lower fuel cost than the utility's average current fuel cost. Therefore, when the new plant becomes operable, the increased fixed costs are somewhat offset by reduced fuel costs. However, these commenters argue that because CWIP in rate base will not be offset by these anticipated fuel cost savings, the price of power which includes CWIP will overstate the actual future costs. Second, wholesale customers state that, if the cost of power generated by new facilities is less than from existing facilities, 94/ the future cost of power will decline. If CWIP is included in rate base, these commenters argue, the price signal supplied to ratepayers is that costs are rising, when in fact they are not.

Because consumers should be expected to use power rationally, the Commission believes accurate price signals are important. The Commission believes that CWIP-based rates provide a more accurate picture of trends in power costs. As we stated above, demand for power will increase in the future

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94/ DOE states that a nuclear plant which is intended to replace base load oil-fired capacity is an example of a new plant which will reduce the overall price of electricity to consumers.

requiring some new capacity construction. Capacity costs in real terms have been increasing over the last decade. By pricing electricity at average system costs, trends in costs and therefore in rates tend to be understated. Because rates do not reflect the cost of providing the incremental unit of electricity required to serve new demand, a customer receives a price signal which may vary from the true cost to the utility of providing service.

Undeniably, CWIP in rate base, to varying degrees, will increase present rates. Those rate increases inform purchasers of power of the increased costs of providing service to them. As stressed above, we anticipate that including CWIP in rate base will tend to provide more accurate price signals to consumers leading to more efficient consumption (and investment) decisions.

3. Other Rate-Related Issues

a. Price Squeeze and Undue Price Discrimination

Among its responsibilities, the Commission is obligated to foster competition in the electric utility industry, particularly at the wholesale level. Price squeeze is the term used to describe price discrimination that has an anticompetitive effect and that is directed against an electric utility's wholesale customers. A price squeeze exists if a utility's price for wholesale service is higher in relation to wholesale costs than is the utility's price for retail service in relation to retail costs, resulting in actual or potential impairment of the wholesale customer's ability to compete with the utility for that retail service.

In the Notice of Proposed Rulemaking, the Commission stated that it would explore, in each case in which the "price squeeze" issue is raised, the factors which can contribute to a finding of "price squeeze" and undue discrimination, including the inclusion of CWIP in rate base. 95/ The Commission also stated that it intends "to retain the flexibility to deny CWIP in rate base or modify other cost of service methods as possible remedies after a finding of undue discrimination" and that it will not limit the denial of CWIP in rate base to those circumstances in which the CWIP policy of the relevant state differs from the Commission's policy. Nevertheless, the potential for a price squeeze or other undue price discrimination in particular cases is not an obstacle, in the Commission's view, to a change in its CWIP policy.

With respect to retail power sales, several wholesale customers believe that the inclusion of CWIP in rate base will create a price squeeze and that a final rule should be drafted so as to avoid any possibility of such a price squeeze. Others among this group of commenters pointed out that the potential for price squeeze precludes the inclusion of CWIP in rate base altogether, except in specific cases where price squeeze would

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95/ 46 Fed. Reg. 39,450.

not occur. Other wholesale customers state that the rule should operate to limit the inclusion of CWIP in rate base if a price squeeze is found to exist.

Wholesale customers also view CWIP in rate base as an impairment to competition in the wholesale power market in other respects. These commenters anticipate that CWIP in rate base will require wholesale power customers to invest in the plant of their power suppliers, thereby deterring them from changing power suppliers for fear of losing "their" investment. Wholesale customers also argue that CWIP in rate base will make joint ownership of generation facilities impossible for municipal and cooperative utilities whose resources will be strained by having CWIP in their rates.

Investor-owned utilities claim that CWIP in rate base will not cause a price squeeze because of its small impact in relation to the total cost-of-service and the fact that the majority of states already allow varying amounts of CWIP in rate base, thereby lowering the chance of price squeeze occurring when the Commission allows CWIP in rate base. Commenting utilities state that, in any case, consideration of the issue should await a *prima facie* showing of price squeeze in individual cases, rather than be dealt with in a generic rulemaking. In sum, these commenters maintain that CWIP should be addressed in the same manner as any other cost-of-service or rate base item which may cause a price squeeze.

The Commission has considered the potential for price squeeze from this rule. No substantive evidence establishing the occurrence or likely occurrence of a price squeeze was submitted in this record. The Commission's own analysis confirms that the final rule does not generally create price discrimination where it does not otherwise exist, although, as the percentage of CWIP in rate base increases, the likelihood of some price discrimination also appears to increase. 96/ Accordingly, with respect to the arguments of wholesale customers, the Commission finds no indication that undue price discrimination or other anticompetitive effects will occur necessarily as a result of implementing the final rule.

Price squeeze or undue discrimination issues may be examined as they might arise in particular cases. The Commission, of course, retains flexibility to deny inclusion of CWIP in rate base or to modify rate treatment of other cost-of-service items as a means of remedying a problem after a finding of undue discrimination. But we do not believe that the rule must operate to automatically deny CWIP simply because a price squeeze is found to exist. If such action is appropriate, it will be based on determinations made on a case-specific basis. 97/

96/ See Environmental Assessment, supra, at § 4.2.5.

97/ This is consistent with our stated policy not to remedy a price squeeze if it is due solely to state regulatory action or inaction. See Opinion No. 157, Pennsylvania Power Co., Docket No. ER77-277-002, et al., 21 FERC ¶ 61,313 (December 21, 1982).

b. Rate Stability

Investor-owned utilities, an accounting firm, and a university-sponsored analysis show that the sudden increase in rates which under an AFUDC policy accompanies the completion of a new facility, is lessened if CWIP is included in rate base. These commenters state that the inclusion of CWIP in rate base helps smooth the price path of electricity for two reasons. First, as a utility proceeds to construct a new plant, CWIP is gradually included in rate base with a consequent gradual increase in rates and a relatively stable rate pattern. Under an AFUDC policy, the total costs of the completed plant, including the accumulated financing costs, is included in rate base at the time the plant is made operational. As a result, the next rate filing by the utility will reflect a sudden jump in rates. Second, CWIP in rate base results in quantitatively smaller total additions to rate base than under AFUDC, because the financing costs capitalized over time are included in rate base as part of the total cost of the plant. Under a CWIP policy financing costs are recovered currently.

Wholesale and retail customers state their preference for lower current rates and do not express a concern with regard to the price path that results from an AFUDC policy. Rather, these commenters focus on the relative value of the rates and not the stability of rates over time.

The CWIP approach reduces the total addition to rate base at the time of completion and helps stabilize rates. The lumpiness in rates which occurs under an AFUDC policy is ameliorated by the gradual inclusion of CWIP over a longer period of time. To further smooth the price path of rates under a CWIP in rate base policy, the final rule incorporates a phasing provision which limits the rate increase attributable to CWIP to six percent in the first year and another six percent in the second year after the effective date of the rule. This provision responds to the Commission's concern which was expressed in the short-term price impact "safety-value" of the proposed rule and will ensure that the initial rate impact of the final rule will not be severe. As a result, consumers will be protected from financial shock or economic dislocation as a consequence of any precipitous increase in rates that may occur when the final rule takes effect.

E. Alternative Methods of Providing CWIP Relief

The Commission approached with an open mind the question of how its policy on CWIP in rate base might be improved. The Notice of Proposed Rulemaking presented a number of alternative CWIP policies and requested that commenters propose additional alternatives. One approach discussed in the Notice was a mechanical rule which utilizes a threshold test of whether a particular utility is experiencing financial distress attributable to a construction program. Virtually all commenters are critical of this approach and, for a variety of reasons, favored other alternatives.

Investor-owned utilities generally support inclusion of a fixed percent of CWIP industry-wide, with 100 percent as the preferred percentage. In contrast, wholesale and retail customers generally oppose all of the proposed CWIP alternatives, urging retention of the present rule in § 2.16 of the Commission's regulations. Some customers also suggest that, if the Commission is determined to allow CWIP, consideration should be given to including only the interest costs associated with CWIP or some alternative that would make clear that ratepayers are investing in the utilities (contributions in aid of construction or capital certificates methods).

The Commission stated in the Notice that "the specific formulation . . . in § 2.16 has not proven to be satisfactory." The present "financial distress" rule has produced "protracted and complex litigation" that, in several cases, lasted three or more years. In addition, few requests for CWIP relief have been made under the rule and in only one recent case has CWIP actually been allowed in rate base to relieve financial distress, subject to refund pending final determination of the rates. 98/ Although

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98/ *See* Montaup Electric Co., Docket No. ER82-325-000, 19 FERC ¶ 61,062 (April 20, 1982).

utilities have not made extensive use of the financial distress provision for CWIP, the Commission noted that since the inception of this rule, the financial condition of the electric utility industry had deteriorated.

The comments focus on six alternative methods for treating construction financing costs: three that would include various amounts of CWIP in rate base, one that would track individual state CWIP policies, and two that are alternatives to including CWIP in rate base. Although other methods are discussed in the record of this proceeding, the range of approaches that commenters critically evaluate are: (1) inclusion of a portion of CWIP in rate base according to a formula, including a threshold eligibility criterion; (2) CWIP included at a specific time in the construction of particular facilities; (3) a fixed percentage of all CWIP in rate base; (4) deference to the treatment of CWIP in rate base afforded by the relevant states; and (5) contributions in aid of construction.

1. Mechanical Inclusion of CWIP in Rate Base; Low Bond Ratings Test and the Ratio of CWIP to Rate Base

The alternative most prominently highlighted in the Notice is a formulary approach predicated upon a showing of financial distress. Under this approach, the financial distress standard is restated as a two-pronged test. This test requires, first, that the utility's first mortgage bonds be rated BBB/Baa or lower, and second, that CWIP exceed 40 percent of jurisdictional rate base. Having met these tests, a utility would be presumptively eligible for rate base treatment of sufficient CWIP to reduce CWIP outside rate base to not more than 40 percent of the whole. However, the Commission could limit or deny rate base treatment on certain specified grounds.

All interests represented in this proceeding were critical of this approach, including investor-owned utilities that oppose any financial distress standard. Wholesale customers contend that a formulary approach is imprecise and would lead to inequities, such as providing relief to utilities whose financial difficulties are not caused by construction programs.

Commenters on all sides of the issue criticize bond ratings as unreliable indicators of a utility's financial condition. They point out that the Commission is obligated to exercise its independent judgment rather than rely upon the decisions of private rating agencies. Investor-owned utilities, on one hand, criticize the level of bond rating (BBB/Baa) that triggers the rule as too low to provide adequate relief. Wholesale customers, on the other hand, argue that such a rule would aid utilities that are not in distress. With respect to the second prong of the proposed rule, that is, the ratio of jurisdictional CWIP to jurisdictional rate base, both investor-owned utilities and wholesale customers find this standard to be arbitrary, lacking any basis in economic fact, and inappropriate for measuring the needs of individual utilities.

Overall, investor-owned utilities believe that the proposed mechanical rule is subject to many of the same criticisms of the existing rule, namely, that it would not grant adequate or timely relief. In other words, such a rule would create uncertainty regarding the ultimate availability of relief and would provide too little revenue to protect the financial integrity of the utility. An investor-owned utility states that the proposed rule would initially provide CWIP relief to as few as 11 utilities and would only minimally increase cash flow. Other investor-owned utilities state that requiring a utility to experience severe financial distress before relief is available is a poor regulatory practice because it needlessly exposes utilities to the vagaries of the capital markets. In addition, these commenters criticize the proposal because CWIP rate relief would be reevaluated in each subsequent rate case to determine continued eligibility, adding uncertainty regarding the continuity of relief.

Several investor-owned utilities, state regulators, and accounting firms suggest that other financial criteria, such as market-to-book ratios, the ability to pay dividends from current earnings, or average industry financial ratios, would better represent the financial condition of a utility than the two tests proposed in the Notice. One state regulatory authority states that any viable formula should (1) limit AFUDC to 20-40 percent of income available to common stock; (2) require that interest coverage ratios be 3.5 to 4.0, excluding AFUDC; and (3) specify that a minimum of 40 percent of the utility's capital requirements be internally-generated cash.

The Commission continues to believe that the existing mechanism for including CWIP in rate base is inadequate. The main approach articulated in the Notice is a refinement of that policy developed in light of the industry's financial difficulties perceived at the time that the Notice was issued. The strong criticism by all groups of commenters suggests that incremental adjustments to the existing CWIP policy will not substantially increase the effectiveness of the rule. A financial distress test limits relief to utilities that are already experiencing a deteriorating financial condition that invariably impairs credit-worthiness and raises capital costs. As a result, the timely completion of construction projects may be jeopardized. Moreover, a financial distress test creates uncertainty in terms of the availability of relief. By attempting to discriminate among utilities, a financial distress test may not clearly signal when and where rate relief is likely. Since financial health is not easily restored to a company, it may not serve the public interest to withhold rate relief until after the financial condition of a utility has deteriorated.

Another problem with the proposed rule is its failure to provide adequate rate relief to utilities in severe financial difficulty. The Commission's own analysis 99/ confirms the contention of commenters on both sides of the CWIP issue that under the proposed rule, qualifying utilities would receive only a minimal increase in cash flow. This would be a wholly inadequate remedy to utilities in severe financial difficulty. The limited nature of the Commission jurisdiction exacerbates this problem. A policy that is reactive to financial difficulty is, therefore, flawed insofar as the available relief will likely be inadequate.

2. CWIP at a Specified Time Before a Facility is Placed in Service.

An alternative to the mechanical CWIP rule set forth in the Notice is the inclusion in rate base of some or all CWIP at a specified time before the particular facility is placed in service. Several states currently permit the inclusion of CWIP in rate base for projects that are one or two years from being completed. Few commenters directly analyze this approach. Several wholesale customers suggest that this timed inclusion of CWIP in rate base should pertain only to certain types of plants -- namely, conservation

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99/ *See* Environmental Assessment, *supra* at § 4.3.2.

programs, load management equipment, and transmission plant. An investor-owned utility suggests limiting CWIP in rate base to base load generation facilities. The wholesale commenters state that allowing CWIP at a specified time before completion of the facility would increase cash flow late in the construction cycle, when carrying costs and the need for rate relief are greatest. Moreover, this approach is said to ameliorate the sharp increase in rates that typically results under an AFUDC policy when new generation facilities become operable. These commenters state that limiting CWIP in rate base until late in the construction cycle will provide management with an incentive to complete construction projects.

The primary criticism of this approach from investor-owned utilities is that it fails to substantially improve utility cash flow or interest coverage ratios. Although one investor-owned utility states that if all CWIP were allowed after the plant was 50 percent completed there would be effective relief, the prevailing view is that the relief afforded would be inadequate.

In the Commission's view, this alternative, while having some of the advantages of the 50 percent rule, is not the best approach. This alternative may lessen but will not prevent potentially steep rate increases similar to those under an AFUDC policy that occur when new plants go on line. With the long lead times,on certain types of generating plants, CWIP balances may grow to very high levels before being placed in rate base under this alternative.

3. Fixed Percentage of CWIP in Rate Base

The Notice proposed a third distinct method of including CWIP in rate base. This approach would allow all utilities to file to include an amount of CWIP not to exceed a uniform percentage of jurisdictionally-allocated CWIP. There would be no case-by-case determination of financial need, as under both the present rule and other proposed alternatives. This type of CWIP relief would be available to any utility, regardless of financial condition, thereby obviating debate over the appropriate standard for determinating financial difficulty.

Commenters on both sides of the CWIP issue analyze the fixed percentage approach extensively. Investor-owned utilities strongly support placing 100 percent of CWIP in rate base and they appear to contend that any fixed percentage approach will provide greater relief to utilities than other proposals. They also believe that a fixed percentage approach will give the clearest signal of, and regulatory impetus toward, the financial recuperation of utilities.

In response, wholesale customers and retail consumers oppose the inclusion of a uniform amount of CWIP in rate base. Because wholesale customers believe the overall financial condition of the industry to be improving, they view this alternative as unnecessarily costly, particularly with respect to utilities that have adequate cash flow, interest coverage ratios and, in general, a strong financial condition. These commenters state that, because the problems of individual utilities can be traced at least in part to management failures, this approach will only reward ineffective management. These commenters view CWIP in rate base as an extraordinary remedy, the availability of which should be limited. This suggests that only a rule that interposes threshold criteria for CWIP relief would be acceptable. Given this viewpoint, opponents of CWIP do not examine whether a fixed percentage of CWIP under 100 percent would be equitable.

The final rule in this docket adopts a fixed percentage approach that allows any utility to file to include up to 50 percent of all CWIP in rate base in addition to any CWIP related to fuel conversion or pollution control facilities. This formulation has definite advantages for both utilities and ratepayers. A utility will receive a predictable quantum of rate relief over the entire construction period that will likely improve the cash flow, interest coverage, and other financial variables of utilities.

One main consideration supports including a uniform amount of capital investments in rate base. That factor is predictability. A fixed amount of CWIP in rate base provides adequate cash flow in a way that is most valuable to utilities during a construction cycle and in a way that minimizes the potential for repeated litigation of a utility's conformance to threshold standards. It affords utility management a predictable return on current investment and thereby an opportunity to choose construction projects that best serve long-term needs rather than projects that are merely affordable in the near-term because their carrying costs are least oppressive. A fixed percentage of CWIP in rate base, included irrespective of a utility's financial condition, constitutes preventive medicine rather than a curative measure. The overall impact will be an improved outlook for electric supply and reliability. If rate stability and optimal planning for capacity are desired objectives, a fixed percentage of CWIP in rate base has the advantage of carrying forth those objectives with certitude and consistency.

Finally, the Commission chooses the 50 percent approach because it more evenly balances the equities due present and future ratepayers. The final rule requires present ratepayers to be responsible for a portion of a financial burden which traditionally was borne by future ratepayers. Both present and future ratepayers share an interest in continued service reliability. By implementing a 50 percent CWIP policy, the Commission is opting to split this cost responsibility.

4. Inclusion of CWIP in Rate Base to the Extent Permitted by States

Under this approach, as presented in the Notice, the inclusion of CWIP in a utility's wholesale rate base would depend upon the CWIP policy of the state regulatory authority that regulates the retail rates of the utility. The objective of such an approach, from the Commission's perspective, would be a uniform treatment of CWIP in the utility's wholesale and retail rates. In those cases where the utility is wholly or predominantly regulated at the federal level, the Commission would independently determine the appropriateness of a request for CWIP rate relief.

Several commenters, including two state regulatory authorities, support this approach because, in their view, it defers to state policies. These commenters state that, at least in those states that allow substantial amounts of CWIP in rate base, this approach would have the advantage of combining federal and state CWIP to achieve a maximum impact. Moreover, this approach eliminates the possibility of price squeeze resulting from differing federal and state CWIP policies and is claimed to reduce the unfair burden on retail customers that heretofore have been subsidizing wholesale customers.

The Commission has chosen not to adopt this approach for several reasons. The Commission must exercise independent judgment in all matters assigned to it by statute. By deferring to the disparate CWIP policies of the states, the Commission might be viewed as having abdicated its responsibility. The significance and impact of deference to state policy would vary dramatically from state to state. In formulating the new rule, the Commission has nevertheless considered CWIP approaches employed by the states.

5. Contributions In Aid of Construction and Capital Certificates

As alternatives to CWIP in rate base, several commenters propose the use of either contributions in aid of construction (CIAC) or capital certificates. These alternatives involve ratepayers directly supplying capital to finance utility construction programs rather than compensating utilities for the carrying costs on capital obtained from capital markets as under the CWIP in rate base alternative. Both the CIAC and the capital certificates alternatives involve mandatory loan assessments from ratepayers. The primary difference between CIAC and capital certificates is whether the loans are refunded to ratepayers. The CIAC approach requires that contributions be nonrefundable which is a requirement for obtaining nontaxable status. In contrast, the capital certificates approach requires the issuance of ownership certificates that earn a return and are redeemable at the time the associated plant is placed in service.

Several commenters state that, given favorable tax treatment, the CIAC method could provide utilities with the same amount of dollars during construction as the CWIP in rate base method but CIAC would further lower the long-run cost to ratepayers because of a reduction in utility tax expenses. One state regulatory commission supplies a plan for implementing the CIAC method. This commenter states that the amount assessed against ratepayers could vary to enable utilities to achieve the same cash flow as under a policy of including varying amounts of CWIP in rate base. Capital derived from CIAC would be placed in a restricted account to be used solely for construction and would also have to meet all Internal Revenue Service requirements for nontaxable status. This commenter also presents a numerical example which, it states, shows that the CIAC method would produce lower revenue requirements over the life of a plant than the AFUDC and CWIP methods based on both absolute or present value dollars.

A group of wholesale customers proposes the capital certificates method. One benefit of the capital certificate method is that customers are treated as investors and do not have to remain customers to receive a return on their investment. This is said to resolve the problem of interperiod equity. The certificates would be redeemable when construction on the new facility is completed. The interest rate on the certificates could be based upon the rate the utility is paying other lenders, the prime rate, or some formula. However, this commenter states that purchase of capital certificates by ratepayers should be required only when a utility shows that normal capital market alternatives are unavailable.

Investor-owned utilities state that the CIAC and capital certificates approaches are inappropriate and ineffective as alternatives to CWIP in rate base. They argue that while CIAC is appropriate to finance unique service requirements to specific customers or customer groups, it is not an appropriate mechanism for capital investments that are intended to benefit the system generally. These commenters state that CIAC would not ensure investors and utility management of long-term stability in cash flow since such funds are generally viewed by investors as one-time cash advances from ratepayers.

A group of investor-owned utility commenters state that CIAC is less effective than CWIP in rate base because CIAC only reduces the amount of capital a utility would otherwise obtain from the capital markets. This commenter states that the reduction would affect only a fraction of a utility's construction requirements. Under the CIAC approach, this commenter states that earnings quality would remain poor and external financing needs would continue to erode interest coverage. However, the commenter states that CWIP in rate base is an efficient way of improving interest coverage and quality of earnings.

Several investor-owned utilities argue that the Internal Revenue Service will not grant the contributions nontaxable status. They further argue that the CIAC approach suffers from the same interperiod equity problems as CWIP in rate base.

Several observations can be made with respect to CIAC and capital certificates. In this proceeding, the proposal to use CIAC goes far beyond its historical purpose. For instance, all customers would be required to supply capital as CIAC. Moreover, the assessment of CIAC would be based upon the cost of plant intended to serve the needs of all customers, rather than an individual customer or a defined customer group. These deviations from the conventional use of CIAC bring into question the federal tax treatment that will be accorded capital provided by ratepayers in the form of CIAC. Because tax-exempt status is necessary for CIAC to be less costly than CWIP in rate base, the uncertainty of this issue raises doubts as to the probable outcome were CIAC to be adopted. Moreover, if capital collected through CIAC and capital certificates are not revenues to utilities, there will be no direct changes in either the quality of earnings or interest coverage ratios. This is a significant drawback to the CIAC and capital certificates alternatives. While they may reduce the extent to which a utility must rely on conventional capital markets to obtain capital, these approaches may not improve a utility's ability to access capital markets.

The Commission believes that CIAC and capital certificates are not reasonable alternatives to placing CWIP in rate base. The tax treatment of CIAC, which is crucial to this approach, is unresolved. Moreover, the benefits to the utility industry appear to be far less than under a CWIP approach.

6. Other Alternatives

Commenters suggest several additional alternatives to the proposed rule. In particular, several environmental and consumer organizations propose a "soft-paths" approach as an alternative to CWIP in rate base, including enhanced efficiencies through power pooling or brokering, conservation, innovative load management programs, and cogeneration and small power production. These commenters state that the long lead time that creates the financial difficulties experienced by utilities that construct large generation facilities could be avoided through a "soft-paths" program.

Several investor-owned utilities state that utilities are vigorously pursuing conservation and alternative energy programs. However, these commenters argue that these alternatives do not supplant the need for CWIP. The potential for these programs may be vast, but the present realities require continued large scale construction programs. Moreover, one investor-owned utility argues that the financial need of utilities is for immediate aid, which this alternative does not offer.

The Commission is strongly committed to providing a regulatory framework which enables and encourages utilities to pursue "least-cost" energy strategies. In this vein, we applaud the increased efficiencies of power pooling and the development of economical energy resources, including cogeneration and small power production. Moreover, the Commission recognizes the importance of conservation. These are all areas where the Commission intends to continue its efforts wholly apart from the present rule.

Another alternative that wholesale commenters suggest is joint ventures between investor-owned utilities and public and cooperative utilities for constructing and operating large generation facilities. Several wholesale customers state that many successful joint ventures have already been undertaken, particularly in cases where such development cannot occur without the participation of cooperatives and municipalities. These commenters state that joint ownership would ameliorate the anti-competitive aspects of the buyer-seller relationship in the wholesale power market.

Several investor-owned utilities state that they presently participate in joint ventures in constructing large generation facilities. However, one investor-owned utility criticizes joint ventures as distress sales by utilities which can be ascribed to mounting financial pressures. This commenter argues that such sales to public systems to achieve current solvency adversely impact the future cost of power. Several of these commenters state that, even to the extent joint ventures are feasible, they do not directly address the problems facing the industry today. The Commission need not address this question in the present rule, however. Our regulations neither prohibit nor require the formation of joint ventures in new plant construction.

F. Administrative Law Issues

1. Environmental Considerations

Subsection 102(c) of the National Environmental Policy Act of 1969 (NEPA) requires federal agencies to assess the environmental impact of "major Federal actions significantly affecting the quality of the human environment." NEPA requires that an Environmental Impact Statement (EIS) be part of any record of decision for such major Federal actions. An EIS is a detailed analysis of the environmental effects (including socio-economic impacts) of the proposed action and the evaluation of alternatives to the proposed action.

In order to determine the need for an EIS, Federal agencies prepare an Environmental Assessment (EA). An EA is a brief overview of the nature and probable effects of a Federal action. An EA has three principal functions. It aids the agency in determining whether to prepare an EIS. When an EIS is not necessary, it provides the basis for preparation of a Finding of No Significant Impact (FONSI). It also facilitates preparation of an EIS when one is necessary. Incidently, the EA may bring to light technical facts of substantive importance for the underlying decisions.

Several commenters state that the CWIP rulemaking is a major Federal action which requires preparation of an EIS. In order to determine the need for an EIS, an EA was prepared for this final rule. 100/ The EA concludes that the final rule is

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100/ See Section V, infra.

not a major Federal action significantly effecting the quality of the human environment. An EIS is therefore not needed in this rulemaking. The Commission makes a Finding of No Significant Impact below.

2. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) requires Federal agencies to consider whether the rule, if promulgated, will have a "significant economic impact on a substantial number of small entities." The Notice of Proposed Rulemaking contained a certification that the proposed rule would not have a significant impact on a substantial number of small entities. Several commenters, including the U.S. Small Business Administration (SBA), contend that the certification is in error and that an Initial Regulatory Flexibility Analysis (IRFA) should be prepared for this rule.

SBA argues that the Commission should have considered the impact of the proposed rule on wholesale and retail customers of the jurisdictional entities subject to rate regulation by the Commission. SBA also argues that because state regulatory authorities may follow the Commission's CWIP policy, this rule will economically affect ultimate retail electric consumers, many of which can be small businesses. SBA suggests that the Commission must prepare an IRFA that analyses these possible impacts.

Contrary to SBA's assertion, the RFA does not require the Commission to consider the effect of this rule, a federal rate standard, on non-jurisdictional entities whose rates are not subject to the rule. The Commission, therefore, is not under a statutory obligation to study the impact of the CWIP rule upon wholesale or retail customers of any jurisdictional utility or upon other ultimate retail electric consumers. The certification in the NOPR did consider the effect of the proposed rule on jurisdictional utilities. No commenter stated that the analysis was incorrect with respect to these entities.

Second, in disagreement with SBA, several commenters, including two state regulatory authorities, maintain that states will not follow the federal policy. This will significantly limit the national impact of this CWIP rule. The Commission has no other information by which to anticipate the course of action which states may adopt for CWIP.

The final rule will affect the same jurisdictional entities as the proposed rule, although the impact may differ with respect to individual utilities. In the NOPR, the RFA certification stated, in the text and footnotes, 101/ as follows:

101/ 46 Fed. Reg. 39,453.

Since nearly all of the jurisdictional utilities which must comply with the rule proposed here are too large to be considered "small entities,"[44] the Act is not applicable. Further, since the utilities regulated by the Commission hold exclusive selling rights within their service areas and are presumed to be natural monopolies, they dominate their respective fields of operation and, thus, cannot be considered to be "small entities" at that term is defined in the Act.[45]

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[44] Currently, 211 entities have rate schedules on file with the Commission. Of these, 184 are Class A or B utilities (having annual electric operating revenues of more than $2,500,000 or $1,000,000 respectively), 20 are other investor-owned utilities, 3 are industrially-owned, two are cooperatives, one is a state agency, and one is a non-profit organization. Thus, only 27 regulated entities complying with this rule have annual electric operating revenues of less than $1,000,000.

[45] Section 601(6) of the Act defines a "small entity" as a small business, a small not-for-profit enterprise, or a small governmental jurisdiction. A "small business" is defined, by reference of Section 3 of the Small Business Act, as an enterprise which is "independently owned and operates [sic] and which is not dominant in its field operation." 15 U.S.C. 632(a) (Supp. 1981).

This analysis holds true for the final rule. The Commission considerated the impact of the final rule on all jurisdictional utilities and on wholesale and retail customers and concludes that the impact would not be significant. 102/ Based upon the above reasons as well as the reasons stated in the NOPR, the Commission is again certifying that the final rule has no significant economic impact on a substantial number of small entities.

V. FINDING OF NO SIGNIFICANT IMPACT

The Commission has prepared an Environmental Assessment (EA) 103/ to determine the need to prepare an Environmental Impact Statement for the CWIP final rule. Based on the Environmental Assessment, the Commission has determined that the proposed action does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969, 42 U.S.C. 4321, et seq.

No significant adverse impacts associated with implementation of the CWIP rule change are identified in the EA. Anticipated effects of the rule change are summarized below.

102/ See Section IV, supra.

103/ The Environmental Assessment has been placed in the record of this proceeding and is available in: Office of Public Information, Federal Energy Regulatory Commission, 825 North Capitol Street, N. E., Washington, D. C. 20426

1. The rate impact of a 50 percent CWIP policy on wholesale customers would be highest in the early years of the policy change and diminish over time. One study -- the EIA study -- found that, nationally, the average rate increase to wholesale customers would be 1.10 percent, 2.27 percent, 0.56 percent, and 0.69 percent in 1983, 1985, 1990 and 1995, respectively. This trend would also occur in each of the regions studied although the level of rate impacts would vary. The initial impacts predicted by this study are biased downward. Another study -- the FERC study -- which evaluated only initial impacts found that the average initial impact would be about a 4.70 percent increase in wholesale rates with a wide variation among utilities. The estimated initial impacts of the FERC study overstate the true impacts. With the six percent ceiling on annual price increases attributable to CWIP during the first two years of the policy change, the average initial price increases predicted by the two studies would be reduced. With the six percent ceiling, the average price increase predicted by the FERC study would fall to 3.57 percent.

2. It is estimated that nationwide only one in 13 retail utility customers -- households, commercial, and industrial establishments -- would be affected by the Commission's rule change. Only one in 77 would experience an initial rate increase at about the six percent ceiling level. The proportion of retail customers affected would vary regionally. The

impact on the retail customers of total and partial-requirement wholesale customers would be different. The retail customers of total-requirement wholesale customers would experience impacts roughly comparable to those of the wholesale customers. In comparison, the retail customers of partial-requirement wholesale customers would experience a lesser impact. The actual impacts on the different classes of retail customers also depend upon the procedures used by state and local authorities for passing on wholesale rate changes to retail customers.

3. In general, the financial condition of the FERC-jurisdictional portion of utilities would be measurably improved by a 50 percent CWIP policy. At the national level, the EIA study shows that internal cash flow would improve by an average of 5.38 percent, 9.69 percent, 4.18 percent and 4.32 percent in 1983, 1985, 1990 and 1995, respectively. The FERC study shows an even more positive initial impact, i.e., an average increase of 13.08 percent. As indicated above, the initial impacts predicted by the EIA study understate the true impacts while the FERC study overstates the initial impacts. There would be corresponding improvements in interest coverage ratios and internal cash flow as a percent of construction expenditures. As with the price impacts, these impacts would vary widely among individual utilities and regions, depending upon the level of construction activity and its relation to rate base. The total company impacts would vary depending on the ratio of

FERC-jurisdictional sales to total sales and to the extent that state and local commissions follow the FERC's CWIP policy.

4. Allowing CWIP in rate base would produce savings in financial costs to utilities although the magnitude of such savings is uncertain. Such savings would occur either through reductions in the costs of debt and equity capital or through increased flexibility in timing and choice of security issuances.

5. The Commission's final rule would affect utility investment decisions and fuel choices, although this impact would be small on an industrywide basis. This impact would vary among utilities in relation to the percentage of their sales regulated by the Commission. If the Commission allowed 100 percent of jurisdictional CWIP in rate base and state commissions did not change their policies accordingly, only coal and turbine plant additions would be affected and to a relatively minor degree. If, on the other hand, the Commission allowed 50 percent of jurisdictional CWIP in rate base and state commissions followed the Commission's precedent such that utilities averaged inclusion of 50 percent of all of their CWIP in rate base (jurisdictional and nonjurisdictional), there would also be minor changes in oil-steam, gas-steam, and hydro plant addition categories. With regard to fuel choices, reductions in demand brought about by higher prices would generally reduce oil, gas, and coal consumption initially. Changes in fuel choice in later years would depend critically upon the relative prices of these fuels.

6. Probable environmental impacts resulting from plant, fuel, and demand changes in response to the CWIP rule implementation would be negligible but predominantly beneficial, and would primarily result from a general decrease in demand and cut back in coal utilization in most regions. Environmental changes would not be detectable at a national level of analysis but could be at the regional or local level.

7. The major socioeconomic impact of the FERC's final rule on CWIP would be the initial rise in the cost of electricity and thus the greater proportion of budgets allocated to electricity by those retail customers of utilities which purchase some or all of their electric power at wholesale -- about one in 13 retail consumers of electricity. The socioeconomic impacts on these consumers at the average national and regional levels would be minor in terms of percent increases in rates, _i.e._, average national, regional, and individual utility rate increases would generally be less than five percent. Only about one-sixth of the affected retail customers -- one in 77 retail customers nationally -- would experience the six percent ceiling on initial rate increases (assuming all jurisdictional utilities applied for and received the maximum CWIP allowance under the final rule). Socioeconomic impacts would be unequally distributed among and within customer classes and regions. A small number of households and businesses could be adversely

affected, but overall regional and national effects would be insignificant.

8. The impacts of a wide range of alternatives to the 50 percent CWIP rule were considered in this study. The impacts of alternatives considered varied both qualitatively and quantitatively from those of the 50 percent CWIP case.

VI. REGULATORY FLEXIBILITY ACT CERTIFICATION

For the reasons set forth above in Section IV.F.2. of this preamble, the Commission certifies, pursuant to section 605(b) of the Regulatory Flexibility Act of 1980, that this final rule will not have a significant economic impact on a substantial number of small entities.

VII. SUMMARY OF THE RULE AND INFORMATION REGARDING IMPLEMENTATION

Under the new rule, § 2.16 is deleted from the regulations and a new § 35.26, entitled "Construction Work in Progress" is inserted. Under § 35.26, utilities may continue to file to include in rate base any CWIP costs incurred for pollution control facilities and fuel conversion facilities. The new rule makes no change in Commission practice in this regard. In addition, the new rule provides that a utility may file to include in rate base up to 50 percent of all CWIP in excess of that actually included in rate base as pollution control or fuel conversion facilities, regardless of the utility's financial condition.

Any CWIP that is or may be properly included in Accounts 107 or 120.1, including construction expenditures and any AFUDC already recorded by the utility, is eligible for rate base in accordance with the new rule.

Paragraph 35.26(a) specifies that the rule will apply to any rate schedules filed by any public utility, as defined in subsection 201(e) of the Federal Power Act. No utility may include CWIP in rate base unless a request is made under this section.

Paragraph 35.26(b) sets forth the definition for the term "CWIP." CWIP includes both the expenditures in the construction project and accrued AFUDC (Account 107). Moreover, CWIP includes investment in nuclear fuel in process of refinement, conversion, enrichment, and fabrication and all accrued AFUDC (Account 120.1). This paragraph also defines "pollution control facility" and "fuel conversion facility."

Paragraph 35.26(c) sets out the general rule. The general rule provides that CWIP may be included in rate base in any initial rate schedule or any rate schedule change filed under § 35.12 or § 35.13. Under subparagraph (c)(1), the Commission retains the existing treatment of CWIP for pollution control facilities by allowing the inclusion of such CWIP in rate base. The description of pollution control facilities has been revised to reflect changes in the language in the Internal Revenue Service laws, 26 U.S.C. § 169, and the Commission's Form No. 1.

Under subparagraph (c)(2), the existing rule allowing inclusion of CWIP for fuel conversion facilities is retained.

Subparagraph (c)(3) sets forth the new rule allowing utilities to include in rate base not more than 50 percent of any CWIP allocable to electric power sales for resale which is not otherwise included in rate base under subparagraphs (c)(1) and (2) of the new § 35.26. 104/ This is intended to permit the inclusion of 50 percent of the 13-month average balance 105/ of CWIP in addition to CWIP already included in rate base for pollution control or fuel conversion facilities.

Paragraph 35.26(d) limits the amount of CWIP allowed in rate base under subparagraph (c)(3) in the first two years after the effective date of the rule. The limitation applies to requests for rate schedule changes filed under § 35.13, but not to initial rate schedules filed under § 35.12. Although the Commission recognizes that a utility may file a rate schedule change at any time, if a utility proposes to include CWIP (other than for pollution control and fuel conversion facilities in rate base), there are two conditions which must occur for such a filing to be acceptable insofar as CWIP is concerned.

104/ The inclusion of CWIP in rate base may eliminate some timing differences associated with interest expense and, therefore, income tax allowable for ratemaking may be affected.

105/ The Commission expects that for purposes of determining the amount of CWIP includable in test period rate base, utilities will use the traditional rule of the 13 monthly average balances, meaning the beginning and end of each month in the test period. *See* Louisiana Power & Light Co., Opinion No. 110 (Docket No. ER77-533) 14 FERC ¶ 61,075 (1981).

First, any individual rate filing must not propose more than a six percent CWIP-related rate increase pursuant to § 35.26(c)(3). This increase will be measured in terms of the total wholesale revenues of the utility rather than by reference to individual customers or customer classes. 106/ Second, any prior rate schedule that included CWIP under subparagraph (c)(3) of this section must be in effect for not less than 10 months. 107/ This provision is intended to restrict rate increases directly related to CWIP in rate base to six percent in the first year of the rule and 12 percent over the first two years. In the third year, a utility may include any amount of CWIP consistent with the other provisions of rule. 108/

Paragraph 35.26(e) implements the Commission's determination to permit the allowable CWIP expenses to be collected beginning when the general rate becomes effective, whether or not the rates are subject to refund.

106/ The rule requires utilities to derive revenue requirements both with and without CWIP in rate base. The aggregate CWIP-based revenue requirements and attendant revenue levels will be compared to the aggregate annualized revenue level of the superseded rates.

107/ A utility that has requested CWIP in rate base under § 2.16 is not precluded by the initial 10-month limitation under subparagraph (d) of this rule from first filing for CWIP in rate base as it wishes following the effective date of the rule. However, under the new rule, once such a utility has requested CWIP in rate base for any rate filing, the limitation in subparagraph (d) will apply according to its terms.

108/ In order to enable the Commission to measure CWIP in rate base in those cases in which the rate is settled and made effective in terms only of agreed-upon dollar amounts, without reference to the amount of CWIP rate base, the Commission will presume the rate to be based upon CWIP if, and to the extent that, the utility's rate schedule filing requests CWIP under subparagraph (c)(3) of this section.

Paragraph 35.26(f) continues, in substance, the present Commission rules regarding the books of account by requiring a utility including CWIP in rate base to discontinue the capitalization of any allowance for funds used during construction (AFUDC).

Paragraph (g) requires utilities to propose accounting procedures as part of rate filings in Statement AO, which include CWIP in rate base, to ensure that wholesale customers will not be charged for both capitalized AFUDC and a corresponding return on CWIP in rate base and that wholesale customers will not be charged for any corresponding AFUDC capitalized as a result of differing accounting or ratemaking treatments accorded to CWIP by state or local regulatory authorities. The accounting procedures proposed by the utility should include a consideration of any adjustments that are necessary to reflect a lack of coincidence between proposed and actual effective dates for CWIP-based rates and monthly differences between test period and actual CWIP balances. 109/

109/ In order to ensure the appropriate discontinuance of AFUDC capitalization, the Commission instructs any utility that requests CWIP in rate base under this rule as follows:

1. The average amount of CWIP requested in rate base in the utility's rate filing should be excluded from construction balances for purposes of calculating book AFUDC accruals, beginning on the effective date of the new rates, except to the extent that the stipulation of the parties or the Commission's order provide for a different amount of CWIP in rate base. This will ensure that in settled cases, a utility's rates will be presumed to include CWIP in rate base to the extent requested in its rate filing, except as noted above.

[Footnote continued on next page.]

Finally, conforming changes are made to § 35.13 which govern cost of service statements filed in conjunction with changes in rate schedules. The rule amends certain statements in existing paragraph 35.13(h) to reflect the fact that utilities

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109/ [Footnote continued from previous page.]

2. In calculating the AFUDC rate used for book purposes under the Uniform System of Accounts (Electric Plant Instructions, Instruction 3(17)), the average jurisdictional amount of CWIP and nuclear fuel in process of refinement, conversion, enrichment, and fabrication requested in the utility's rate filing for rate base treatment must be excluded from the "W" component of the AFUDC formula beginning on the effective date of the new rates, except to the extent that the stipulation of the parties or the Commission's order provide for a different amount of CWIP in rate base.

3. For purposes of calculating rate base, the accrual of AFUDC on CWIP balances added to test period rate base must cease on the proposed effective date of the new rates.

4. The Commission makes the following observations with respect to the question of how timing differences between the test period and the effective date of CWIP-based rates ought to be handled by utilities. As previously described, CWIP-based rates may become effective before, after, or at any time during the test period. The rule therefore requires utilities to provide accounting procedures to ensure that wholesale customers will not be charged for both capitalized AFUDC and corresponding amounts of CWIP proposed to be included in rate base. While the actual level of CWIP will change over time, the average level of CWIP included in rate base remains unchanged until a new rate change becomes effective. Because of this, the amount of CWIP placed in rate base may exceed the actual balance of CWIP at the time of filing or when the test year begins. This phenomenon may occur, for example, if a construction program is just beginning, if costs are anticipated to rise in the immediate future, or if the proposed effective date is prior to the test period upon which the rate filing is based. In these cases, a utility will record a negative AFUDC to ensure a proper charging of costs to ratepayers.

will now be able to include in rate base CWIP amounts, in addition to those for pollution control and fuel conversion facilities. Subparagraph (h)(7) is revised to additionally require functionalization of facilities including by indicating whether particular facilities are dedicated to a particular customer or group of customers, such as unit sales transactions.

A new subparagraph (h)(38) -- Statement BM Construction Program Statement -- is added which requires utilities that file to include CWIP in rate base under subparagraph (c)(3) to file information useful in evaluating the need for power and the alternative methods of meeting that need. Any rate filing which includes CWIP under § 35.26(c)(3) must include Statement BM. The new Statement BM requires a utility to describe its long-range program for providing reliable and economic power, to include an assessment of the relative costs of adopting alternative strategies and an explanation of why the program adopted is prudent and consistent with a least-cost energy supply program. This information will assist the Commission in evaluating prudence, including the extent to which utilities seeking rate base treatment of CWIP are utilizing least-cost strategies.

VIII. EFFECTIVE DATE

This final rule is effective [30 days after publication in the Federal Register.]

(Federal Power Act, 16 U.S.C. §§ 791-828c; Department of Energy Organization Act, 42 U.S.C. §§ 7101-7352; E.O. No. 12009, 3 C.F.R. § 142 (1978))

In consideration of the foregoing, the Commission amends Chapter I, Title 18 of the Code of Federal Regulations, as set forth below, effective 30 days after publication in the Federal Register.

By the Commission.

(S E A L)

Kenneth F. Plumb

Kenneth F. Plumb
Secretary.

1. Part 35 is amended in the Table of Contents by adding at the end of Subpart C a new § 35.26, to read as follows:

PART 35 FILING OF RATE SCHEDULES

* * * * *

Subpart C - Other Filing Requirements

* * * * *

§ 35.26 Construction work in progress.

* * * * *

2. Part 35 is amended by adding a new § 35.26, to read as follows:

§ 35.26 Construction work in progress.

(a) Applicability. This section applies to any rate schedule filed under this part by any public utility, as defined in subsection 201(e) of the Federal Power Act.

(b) Definitions. For purposes of this section--

(1) "Construction work in progress" or "CWIP" means any expenditure for public utility plant in process of construction that is properly included in Accounts 107 (construction work in progress) and 120.1 (nuclear fuel in process of refinement, conversion, enrichment, and fabrication) of Part 101 of this chapter, the Uniform System of Accounts Prescribed for Public Utilities and Licensees Subject to the Provisions of the Federal Power Act (Class A and Class B).

(2) "Pollution control facility" means an identifiable structure or portions of a structure that is designed to reduce the amount of pollution produced by the power plant, but does not include any facility that reduces pollution by substituting a different method of generation or that generates the additional power necessitated by the operation of a pollution control facility.

(3) "Fuel conversion facility" means any addition to public utility plant that enables a natural gas-burning plant to convert to the use of other fuels, or that enables an oil-burning plant to convert to fuels other than natural gas. Such facilities include those that alter internal plant workings, such as oil or coal burners, soot blowers, bottom ash removal systems and concomitant air pollution control facilities, and any facility needed for receiving and storing the fuel to which the plant is being converted, which facility would not be necessary if the plant continued to burn gas or oil.

(c) General rule. For purposes of any initial rate schedule or any rate schedule change filed under § 35.12 or § 35.13 of this part, a public utility may include in its rate base any costs of construction work in progress (CWIP), including allowances for funds used during construction (AFUDC), as provided in this section.

(1) Pollution control facilities. (i) Any CWIP for pollution control facilities allocable to electric power sales for resale may be included in the rate base of the public utility.

(ii) In determining whether a facility is a pollution control facility for purposes of this section, the Commission will consider:

(A) whether such facility is the type facility described in the Internal Revenue Service laws, 26 U.S.C. 169(d)(1), as follows: "a new identifiable treatment facility which is used * * * to abate or control water or atmospheric pollution or contamination by removing, altering, disposing, storing, or preventing the creation or emission of pollutants, contaminants, wastes or heat";

(B) whether such facility has been certified by a local, state, or federal agency as being in conformity with, or required by, a program of pollution control;

(C) whether such facility is the type facility described in the schedule of "Environmental Protection Facilities," sections 4(A) through 4(D), page 428, FERC Form No. 1, Annual Report of Electric Utilities, Licensees and Others (Class A and Class B), (Revised 12-81); and

(D) other evidence showing that such facilities are for pollution control.

(2) Fuel conversion facilities. Any CWIP for fuel conversion facilities allocable to electric power sales for resale may be included in the rate base of the public utility.

(3) Other CWIP. Not more than 50 percent of any CWIP allocable to electric power sales for resale not otherwise included in rate base under subparagraphs (c)(1) and (2) of this section, may be included in the rate base of the public utility.

(d) Initial limitation. (1) Limit. Beginning on [the effective date of the rule] and ending on [two years after the effective date], a public utility may file to include CWIP in rate base under subparagraph (c)(3) of this section only if:

(i) any increase in the utility's test period aggregate wholesale revenues that is directly attributable to CWIP included in the filed rates in accordance with subparagraph (c)(3) of this section is not more than six percent of the test period aggregate wholesale revenues under the rate schedules to be superseded; and

(ii) the superseded rate schedules, if based in part on CWIP included in rate base under subparagraph (c)(3) of this section, has been effective for not less than 10 months.

(2) Filing. For purposes of determining the size of any rate increase attributable to CWIP proposed to be included in rate base under subparagraph (c)(3), a public utility must derive

and adequately support, in Statement BK under paragraph (h)(36) of this section, aggregate jurisdictional revenue requirements both with and without such CWIP in wholesale rate base.

(3) Initial rates. The limitation in this paragraph does not apply to initial rate schedules filed under § 35.12.

(e) Effective date. If a public utility proposes in its filed rates to include CWIP in rate base under this section, that portion of the rate related to CWIP is collectable at the time the general rate becomes effective pursuant to Commission order, whether or not subject to refund.

(f) Discontinuance of AFUDC. On the date that any proposed rate that includes CWIP in rate base becomes effective, the public utility must discontinue the capitalization of any AFUDC related to those amounts of CWIP in rate base.

(g) Accounting Procedures. At the time that a public utility files to include CWIP in rate base pursuant to this section, it must propose accounting procedures in that rate schedule filing that:

(1) ensure that wholesale customers will not be charged for both capitalized AFUDC and corresponding amounts of CWIP proposed to be included in rate base; and

(2) ensure that wholesale customers will not be charged for any corresponding AFUDC capitalized as a result of different accounting or ratemaking treatments accorded CWIP by state or local regulatory authorities.

3. In § 35.13, the Table of Contents is amended by adding at the end a new Statement BM, to read as follows:

§ 35.13 Filing of changes in rate schedules.

Contents

* * * * *

(38) Statement BM -- Construction program statement.

* * * * *

4. Section 35.13 is amended by revising pararaphs (h)(7) and (h)(13), to read as follows:

§ 35.13 Filing of changes in rate schedules.

* * * * *

(h) Cost of service statements. * * *

(7) Statement AG -- Specified plant accounts (other than plant in service) and deferred debits. * * *

(i) * * *

(ii) The utility shall state the electric utility component balances in Accounts 107 and 120.1, individually and in total, for each item of construction work in progress for pollution control facilities, fuel conversion facilities, or any other facilities that qualify for inclusion in rate base under § 35.26. The utility shall state such balances for each major functional and subfunctional classification under Statement AD as of the beginning of the first month and the end of each month of Period I and Period II with an average of the 13 balances for each Period.

* * * * *

(13) Statement AM -- Construction work in progress. Statement AM is a statement of the amount of construction work in progress described according to functional classification for Period I and Period II. For production plant and transmission plant, the utility shall state the balances as of the beginning of the first month and the end of each month of both Period I and Period II, with an average of the 13 balances for each period. For each function of plant identified in Statement AD other than production or transmission, the utility shall state the balances as of the beginning and the end of both Period I and Period II, with an average of the beginning and end balances for each period. If any Period I or Period II balance is not available, the utility shall include monthly estimates and an explanation of the relevant circumstances. Pollution control facilities, fuel conversion facilities, or other construction amounts reported in Statement AG shall be excluded from amounts reported in this Statement.

* * * * *

5. In § 35.13, the references to Statement BL that appear in paragraphs (d)(1), (2), and (4) and (e)(1)(i), (ii), and (iii) and in the introductory clause in paragraph (h) are replaced by reference to Statement BM.

6. In § 35.13, paragraph (a)(2)(i) is revised to read as follows:

§ 35.13 Filing of changes in rate schedules.

* * * * *

(a) General rule. * * *

(2) Abbreviated filing requirements. (i) For certain rate increases. Any utility that files a rate schedule change that provides for a rate increase may submit with its filing only the information required in paragraphs (b), (c), and (h)(37) of this section and in § 35.12(b)(2) and (5) of this part and, for any rate increase described in clause (B) of this subparagraph, the information required in paragraph (h)(38) of this section, in accordance with paragraph (g) of this section, if the rate increase is:

* * * * *

7. Section 35.13 is amended by revising paragraph (h) and by adding a new paragraph (h)(38), to read as follows:

§ 35.13 Filing of changes in rate schedules.

* * * * *

(h) Cost of service statement. * * *

(38) Statement BM -- Construction program statement. Statement BM is a summary of data and supporting assumptions relating to the economics of any construction program to replace or expand the utility's power supply that shall be filed if the utility is filing for construction work in progress in rate base under § 35.26(c)(3) of this chapter. The filing utility shall describe generally its program for providing reliable and economic power for the period beginning with the date of the filing and ending with the tenth year after the test period. The statement shall include an assessment of the relative costs of adopting alternative strategies including an analysis of alternative production plant, *e.g.*, cogeneration, small power production, heightened load management and conservation efforts, additions to transmission plant or increased purchases of power, and an explanation of why the program adopted is prudent and consistent with a least-cost energy supply program.

8. Section 2.16 is revoked.

APPENDIX TO PREAMBLE
Docket No. RM81-38

TABLE NO. 1

Impact on Utilities of Allowing Uniform 50% CWIP in Rate Base †

Region	% Change in Cash Flow*			
	1983	1985	1990	1995
Nation	**5.38**	**9.69**	**4.18**	**4.32**
New England	**4.78**	**22.16**	**-2.22**	**-1.94**
New York/New Jersey	**1.71**	**4.02**	**2.22**	**2.55**
Middle Atlantic	**3.34**	**6.67**	**4.72**	**3.81**
South Atlantic	**6.90**	**11.16**	**6.98**	**6.01**
Midwest	**7.28**	**14.23**	**5.52**	**5.64**
Southwest	**2.28**	**3.47**	**4.89**	**3.41**
Central	**6.13**	**11.84**	**12.94**	**14.00**
North Central	**-0.31**	**1.17**	**-2.65**	**5.59**
West	**12.85**	**13.68**	**1.17**	**-0.98**
Northwest	**16.77**	**10.92**	**0.50**	**6.72**

† This analysis does not reflect the initial limitation on the increases in rates attributable to including CWIP in rate base per the final rule.

* Calculated over the base case.

Source: Energy Information Administration (1982b).

TABLE NO. 2

Impact on Utilities' Financial Indices of Allowing 50% CWIP in Rate Base †

Financial Index	% Impact on Utilities 1983	 1985	 1990	 1995
Internal Cash Flow as a Percent of Construction Expenditures:				
Base	33.61	35.81	44.79	41.46
50% CWIP	40.99	44.86	50.45	46.21
Before-Tax Interest Coverage:				
Base	2.24	2.12	2.20	2.16
50% CWIP	2.45	2.48	2.45	2.41
Rate of Return on Common Equity:				
Allowed	16.7	14.9	14.6	13.1
Base	14.2	14.2	14.6	14.0
50% CWIP	12.8	14.3	14.7	14.2

† This analysis does not reflect the initial limitation on the increases in rates attributable to including CWIP in rate base per the final rule.

Source: Energy Information Administration (1982b).

TABLE NO. 3

Impact on Utilities' Financial Indices of Allowing 50% CWIP in Rate Base †

Financial Index	Mean	Standard Deviation	Impact* High	Impact* Low
Percent Change in Cash Flow Over Base Case:	13.08	12.11	60.86	0.15
Internal Cash Flow As a Percent of Total Sources of Funds:				
Base	50.18	21.88	116.38	14.07
50% CWIP	52.50	20.76	116.09	14.18
Before-Tax Interest Coverage (Actual):				
Base	2.40	0.89	5.73	0.73
50% CWIP	2.78	0.85	5.75	0.75
Before-Tax Interest Coverage (Hypothetical, Definition 1):				
Base	2.90	0.84	5.50	1.28
50% CWIP	3.29	0.75	5.55	1.40
Before-Tax Interest Coverage (Hypothetical, Definition 2):				
Base	2.74	0.78	5.48	1.41
50% CWIP	3.12	0.68	5.50	2.00

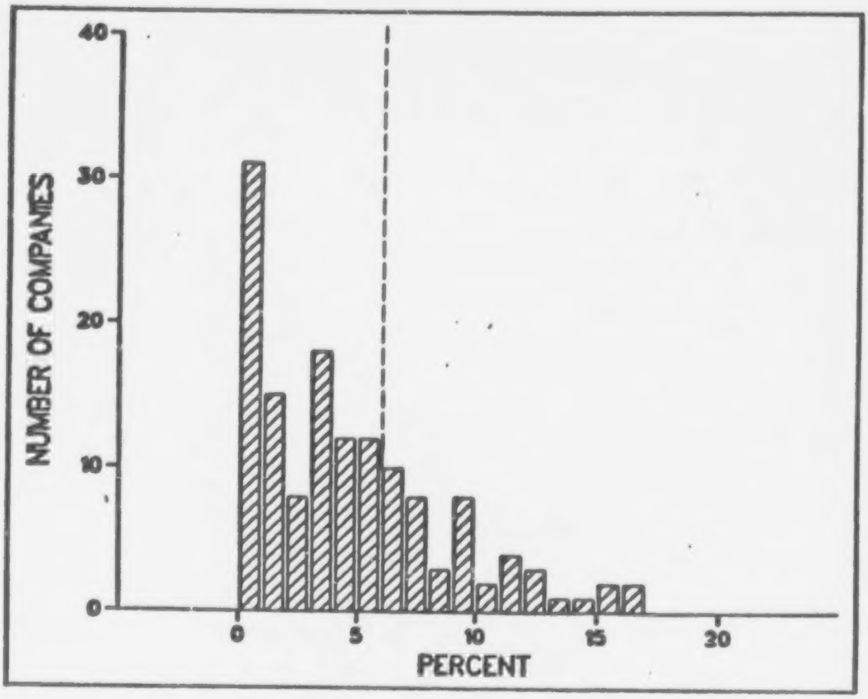
† This analysis does not reflect the initial limitation on the increases in rates attributable to including CWIP in rate base per the final rule.

* Data reflect the impact on the highest and lowest individual utility in the sample.

Source: Federal Energy Regulatory Commission Study (1982).

TABLE NO. 4

Distribution of Initial Rate Impacts with Inclusion of 50% CWIP in Rate Base †



† The maximum first year rate impact under the final rule is 6%. The cumulative two-year maximum impact is 12%. Thereafter, utilities may include CWIP to the extent permitted by the rule.

Source: Federal Energy Regulatory Commission Study (1982).

TABLE NO. 5

Impact on Customer of Allowing Uniform 50% CWIP in Rate Base †

Region	1983	1985	1990	1995
		% Change in Price*		
Nation	1.10	2.27	0.56	0.69
New England	1.84	4.30	-1.41	-0.76
New York/New Jersey	0.36	0.85	0.44	0.60
Middle Atlantic	0.76	1.65	0.13	0.47
South Atlantic	1.64	2.63	0.84	0.48
Midwest	1.35	2.19	0.37	1.29
Southwest	NC**	0.30	0.82	0.69
Central	2.58	4.45	4.07	2.98
North Central	0.79	1.10	0.30	-0.47
West	3.73	3.49	-0.26	-0.23
Northwest	5.17	6.65	-0.92	4.36
		% Change in Demand*		
Nation	-1.42	-1.98	-0.84	NC
New England	-1.23	NC	1.06	NC
New York/New Jersey	NC	-0.80	0.71	0.56
Middle Atlantic	NC	-2.36	-0.66	0.27
South Atlantic	-1.57	-2.06	-0.97	-0.19
Midwest	-2.67	-3.34	-1.79	0.43
Southwest	NC	-0.35	-0.30	-0.22
Central	-2.25	-2.19	-2.10	-0.82
North Central	NC	NC	NC	0.95
West	-1.25	-1.71	0.51	0.44
Northwest	NC	NC	NC	1.85

† This analysis does not reflect the initial limitation on the increases in rates attributable to including CWIP in rate base per the final rule.

* Calculated over the base case.

** NC = Negligible change.

Source: Energy Information Administration (1982b).

STATEMENT OF C. M. BUTLER III, CHAIRMAN IN RESPONSE TO "MOTION REQUESTING RECUSAL" IN DOCKET NO. RM81-38, CONSTRUCTION WORK IN PROGRESS FOR PUBLIC UTILITIES

After careful review of the arguments presented, I have concluded that grounds do not exist for me to recuse myself or be disqualified from the CWIP rulemaking. This conclusion is supported by a memorandum of the FERC General Counsel advising that my statements, about which movants complain, do not require my recusal or disqualification. That memorandum is attached as Appendix A.

Before addressing the merits of the recusal motion, however, I would like to dwell briefly on the matter of procedures for handling such motions. I feel some responsibility to do so because when the motion was filed, I was asked for a reactive statement. In that statement I indicated that the matter would be put to my colleagues for a decision with my abstention. While that seemed an appropriate way in which to dispose of the matter, 1/ I have since been advised that at least one Commissioner feels strongly against putting the matter to a vote. It is feared that the precedent could lead to unnecessary division among the Commissioners should more difficult questions of recusal arise in the future. Upon reflection I agree. The prospect of such division among the Commissioners would probably outweigh the value of the procedure. The procedure which I have adopted might be criticized as unfair if there were no

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1/ *See, e.g.*, Area Rate Proceeding (Permian Basin Area), 33 FPC 43 (1965).

appeal from my decision. Obviously, however, if the participants in this proceeding are disappointed in my resolution of the matter, they will have the opportunity to raise their arguments in the Court of Appeals should they be aggrieved by the Commission's final order in this case. 2/ This procedure basically follows the judicial model, and I expect it will be followed in the future.

The General Counsel's opinion deals at length with the merits of the arguments advanced in support of my recusal. I do not intend to repeat them here. However, I wish to add a few words of my own in connection with the matter. The ground for recusal proffered in the motion is prejudgment of issues in a pending rulemaking. Despite the existence of a relatively rich trove of legal scholarship on the general subject, there appears among practitioners before the Commission, members of the Commission staff, and, indeed, members of the House and Senate and their staffs, considerable confusion over the questions of what is at stake in such matters and how to systematically analyze the factual context when a motion for recusal or disqualification is filed against a decisionmaker in an administrative rulemaking.

2/ See Association of Nat'l Advertisers, Inc. v. FTC, 627 F.2d 1151 (D.C. Cir. 1979), cert. denied, 447 U.S. 921, (1980) (concurring opinion of Leventhal, J.) (The Court of Appeals has jurisdiction of the issue and should hear it with the merits of the case). Cf. Firestone Tire & Rubber Co. v. Risjord, 449 U.S. 368 (1981).

Rulemaking typically requires the decisionmaker to choose between competing priorities in proposing rules. That responsibility suggests a general duty to acquire knowledge and perspective as to matters about which he or she is to act. Such matters are frequently, if not universally, controversial. 3/ Simply stated, ordinary rulemaking is impossible without some prejudgments by the rulemaker: Among other things, a rulemaker must form a preliminary view if he is to make rational allocations of resources (i.e., establish priorities) among competing candidates for rulemaking. 4/ In Judge Leventhal's words, "One cannot even conceive of an agency conducting a rulemaking

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3/ See generally Strauss, Disqualification of Decisional Officials in Rulemaking, 80 COL. L. REV. 990 (1980) (Strauss).

4/ Cf. Laird v. Tatum, 409 U.S. 824, 835 (1972), where Justice Rehnquist made an analogous observation about federal judges:

> Since most Justices come to this bench no earlier than their middle years, it would be unusual if they had not by that time formulated at least some tentative notions that would influence them in their interpretation of the sweeping clauses of the Constitution and their interaction with one another. It would be not merely unusual, but extraordinary, if they had not at least given opinions as to constitutional issues in their previous legal careers. Proof that a Justice's mind at the time he joined the Court was a complete tabula rasa in the area of constitutional adjudication would be evidence of lack of qualification, not lack of bias.

proceeding unless it had delved into the subject sufficiently to become concerned that there was an evil or abuse that required regulatory response." 5/

Thus, the law is clear that not all prejudgments subject quasi-legislative decisionmakers to disqualification. Such distinctions are familiar in the law, and the real question is what kinds of prejudgments necessitate recusal. The strictest legal standard is as follows: A decisionmaker must recuse himself if he has an irrevocably closed mind about an issue of adjudicative fact material to the decision in a matter pending before him. FTC v. Cement Institute, 333 U.S. 683 (1948). 6/ The Cement Institute case was decided in the context of an adjudication. It is generally accepted that a stricter standard should apply to a decisionmaker acting in a quasi-judicial matter (adjudication), than to one acting in a quasi-legislative matter. 7/ The rationale is simple. Fundamental notions of fairness require openmindedness about issues specifically provable and subject to meaningful cross-examination. In contrast, issues of predictive or judgmental fact (quasi-legislative issues) are decided in the context of experience, general philosophy, and the like; and it is virtually impossible for such

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5/ Association of Nat'l Advertisers, Inc. v. FTC, supra n.2, at 1174.

6/ Accord, id; United Steel Workers of America v. Marshall, 647 F.2d 1189, cert. denied, 101 S. Ct. 3148 (1981).

7/ See generally Strauss, supra, n.3.

facts to be decided with a complete tabula rasa. In that sense, the quasi-legislative decision is similar to judgments about constitutional policy or law. 8/ Thus, the analogous model is not the judge, but the lawmaker. The question that is accordingly presented is when, if ever, is a legislator required to disqualify himself from a matter; and to what extent do those rules of conduct apply to the quasi-legislator?

Perhaps unfortunately, this question need not be reached, 9/ because even when the strictest standard -- that applicable to quasi-judicial decisionmaking -- is applied to the remarks of which movants complain, the standard is not satisfied. When those remarks are read in the context in which they were presented, they clearly are not reflective of an unalterably closed mind. 10/

8/ Laird v. Tatum, supra, n.4. See also D. DAVIS, ADMINISTRATIVE LAW TREATISE § 19:3 (2d ed. 1980); Strauss at 1016-17. I do not suggest that regulatory officials should not have an open mind about all issues in a pending matter, even the state of the law. I merely make the inescapable observation that it would be impossible, and in fact undesirable if possible, to ignore one's experience in deciding cases.

9/ But see ACUS Recommendation No. 80-4, 1 CFR § 305.80-4 (Decisional Officials' Participation in Rulemaking Proceedings).

10/ Cf. United Steel Workers of America v. Marshall, supra, n.6. In this connection, I choose to deal with the facts as they are presented as objectively as I can. Although I know my mind is open about all issues in this proceeding, to rest this decision there seems inadvisable because my claim will predictably be dismissed as self-serving.

I wish also to make a general observation. I subscribe strongly to the view that agency decisionmakers should openly discuss policy issues pending before them in order to inform interested persons, to the greatest extent possible, of their policy views. To do so tends to maximize, if not optimize, the opportunity for debate of the issues and for feedback to the decisionmaker. The consequence is movement in the direction of better shaping of issues and higher quality of input, hopefully leading to better reasoned and articulated agency decisions. In addition, that approach is consistent with the spirit of much recent legislation designed to bring government into the sunshine. In contrast, a liberal policy of disqualification would have a chilling effect on the public's opportunity to learn the nature and extent of an agency's concerns about important issues of public policy, and would tend to discourage debate of the issues. The public's ability to understand and participate meaningfully in the agency's decisional process, and predictably the quality of the agency's decisions, would be to a significant extent diminished.

Next, I would like to address some of my specific concerns with the Motion Requesting Recusal. First, the motion's discussion of the law is characterized by such an absence of legal scholarship as to be of concern. 11/ Second, the mischaracterizations of parts of the speech through omission of material parts of it are plausibly knowingly false. 12/ That raises substantial questions under the Code of Professional

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11/ For example, no distinction is drawn between prejudgments of issues of specific fact and policy, legal, and legislative fact issues. *See, e.g.*, FTC v. Cement Institute; *Strauss*. Furthermore, there is *no* reference to the reasonably abundant judicial literature and commentary on the issues raised in general. *E.g.*, *Strauss*. Nor is there any reference to the recommendations of the Administrative Conference of the United States on the matter. 1 CFR § 305.80-4 (Decisional Officials' Participation in Rulemaking Proceedings) (disqualification as inappropriate ". . . for factual judgments that are the consequence of earlier stages of the proceeding, or for prejudgments of policy." *Id.* § 305.80-4C.1.). How does that square with the following ethical consideration?

> Where a lawyer knows of legal authority in the controlling jurisdiction directly adverse to the position of his client, he should inform the tribunal of its existence unless his adversary has done so; but, having made such disclosure, he may challenge its soundness in whole or in part.

D. C. CODE OF PROF. RESP., EC 7-23 (ABA 1976) (*Code*) (Footnote omitted). It strains credulity that of the lawyers signing the motion, none knew of the rich body of law and commentary on the matter, or, even worse, that in the exercise of ordinary care as lawyers could not find it. In this connection, the contrast between the opinion letter of the General Counsel and the motion is stark, indeed.

12/ *Cf.* RESTATEMENT (SECOND) OF TORTS §§ 526-30 (1977) (Title A. Fradulent Character of Misrepresentation).

Responsibility. 13/ Finally, at least one of the allegations of the movants is disingenuous on its face. It is claimed that rejection of the presumption against allowing CWIP in rate base is a forbidden prejudgment. How is the rejection of a prejudgment itself a forbidden prejudgment? It seemed to me at the time more an expression of agnosticism about the issue, to plagiarize from a former colleague. In sum, I believe that the credibility of the motion itself is a matter for careful scrutiny should this aspect of our rulemaking in Docket No. RM81-38 be reviewed by the Courts of Appeal.

C. M. Butler III

Attachment

13/ *See Code*, DR7-102(A)(5): "In his representation of a client, a lawyer shall not knowingly make a false statement of law or fact." This disciplinary rule raises similar questions in connection with movants' representations as to the state of the law. *Cf. id.* EC 7-26: "A lawyer should . . . present any *admissible* evidence . . . . unless he knows, or from facts within his knowledge should know, that such testimony or evidence is false . . .;" *id.* Legal Ethics Committee Opinion No. 79: "[A] lawyer *may* not ethically participate in the preparation of testimony that he or she knows, or ought to know, is false *or misleading*." (Emphasis added.)

APPENDIX A

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON 20426
IN REPLY REFER TO

March 10, 1982

MEMORANDUM TO: Chairman Butler

FROM : Charles A. Moore
General Counsel

SUBJECT : Request For Recusal In Docket No. RM81-38, Construction Work In Progress For Public Utilities

You requested my views on whether you must withdraw from consideration of Docket No. RM81-38, Construction Work In Progress for Public Utilities (CWIP), because of expressions in a speech delivered at "A Seminar on Utility Finances" sponsored by the U.S. National Committee, World Energy Conference and Edison Electric Institute. In my opinion, recusal is not necessary.

RM81-38 is a proposal to include, under certain circumstances, the costs of CWIP in the rate base of electric utilities. The proposed rule, published in an NOPR in July 1981, would establish more precise criteria for determining whether a utility qualifies for inclusion of CWIP in the rate base and for assessing the amount of CWIP that a qualifying utility may include. It would establish specific grounds upon which the Commission may limit the amount of CWIP that would otherwise be included and would permit a utility on a claim of severe financial difficulty to collect CWIP subject to refund (NOPR, p. 2). The NOPR also invited the public to submit alternative proposals, supported by empirical data or other substantial evidence. (NOPR, p. 35).

The speech was delivered on October 27, 1981, before comments were due in RM81-38 or oral hearings were held. 1/ The speech discussed the overall financial health of the electric utility industry and various policy options to address the industry's financial problems. The options fell into two broad categories: deregulation and improved regulation. The CWIP rulemaking was discussed as a target for improved regulation.

The American Public Power Association (APPA) requested that you withdraw from consideration of RM81-38 because "it appears that Chairman Butler already has prejudged two of the fundamental issues in this case -- intergenerational inequities and the presumption against inclusion of CWIP [in the rate base]" (motion,

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1/ Initial comments were due on October 30 and oral hearings were held on December 7 and 8.

p. 6). APPA cited the following remarks as evidence that you summarily dismissed other views, failed to recognize alternatives and have "'an unalterably closed mind' on this issue" (Id., footnote omitted):

> 'I shall accept . . . that the electric utility industry is, indeed, in poor financial shape. I shall also disregard the claims . . . that the financial condition of the utilities is improving' (emphasis in APPA, motion, p. 5).
>
> '. . . there seems to me to be little merit to arguments about intergenerational inequities' (motion, p. 6).
>
> 'I disagree with the staff position -- contained in our notice of proposed rulemaking -- that there should be a presumption against the inclusion of CWIP in rate base' (motion, p. 6).
>
> 'There appears to be three reasons why . . . CWIP might be . . . desirable . . . ' Those reasons were: adequately compensating the company for lack of receipt of cash earnings, receiving revenues if a generating project fails or does not go on line, and meeting the capital market's preference for cash income (motion, p. 6).

Parties to an administrative proceeding have the right to a fair hearing before an impartial decisionmaker. Joint School District No. 1 v. Hortonville Education Association, 426 U.S. 482, 493 (1976). But "impartial, . . . does not mean uninformed, unthinking or inarticulate," Association of National Advertisers, Inc. v. FTC, 627 F.2d 1151, 1174 (D.C. Cir. 1979), cert. den., 447 U.S. 921 (1980). The requirements of due process recognize the necessity for rulemakers to formulate policy in a manner similar to legislative action and to delve into a subject sufficiently before initiating a rulemaking proceeding to conclude tentatively that some agency action is needed (Id.).

Because the object of rulemaking is the implementation of law or policy for the future, an agency member functions very much like a legislator when participating in rulemaking proceedings. Action For Children's Television v. FCC, 564 F.2d 458, 471 (D.C. Cir. 1977). The factual components of such decisions often cannot be separated from their policy foundations. American Airlines, Inc. v. CAB, 359 F.2d 624, 633 (D.C. Cir. 1966), cert. den., 385 U.S. 843 (1966). Disqualification of a Commissioner in a rulemaking proceeding, therefore, has a serious policy effect which does not come into play when disqualification is in an adjudicatory setting.

For judges put aside personal views on the desirability of a law or program when adjudicating specific rights of specific parties. 2/

In agency rulemaking, on the other hand, the administrator is expected to bring his views, policies and insights to bear on the issues confronting the agency. Sierra Club v. Costle, 657 F.2d 298, 400-01 (D.C. Cir. 1981). The administrator's view, in turn, will continue to be reshaped through contact with the public (Id.). 3/ Disqualification of a Commissioner in a rulemaking proceeding is required "only when there has been a clear and convincing showing that an agency member has an unalterably closed mind on matters critical to the disposition of the rulemaking." Association of National Advertisers, Inc. v. FTC, supra,

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2/ But even judges need not disqualify themselves from cases involving points of law with respect to which they previously had expressed an opinion. Laird v. Tatum, 409 U.S. 824, 831 (1972), memorandum of Rehnquist, J.

Generally, under 28 U.S.C. 455(a), a federal judge is required to disqualify himself where his "impartiality might reasonably be questioned." But lack of impartiality is measured by an objective standard of reasonableness. A Federal judge has a clear obligation not to recuse himself without a valid reason. Simonson v. General Motors Corp., 425 F. Supp. 574 (E.D. Pa. 1976). Prior expressions of opinion on the legal issues involved in a proceeding do not serve as a basis for disqualification. "And even a judge's public comment giving a general impression of a state of facts does not present a rigidity against refinement and reflection that disqualifies him from sitting in judgment on a particular fact issue." Association of National Advertisers, supra, 627 F.2d at 1177 (concurring opinion of Judge Leventhal).

3/ "[T]he very legitimacy of general policymaking performed by unelected administrators depends in no small part upon the openness, accessibility, and the amenability of these officials to the needs and ideas of the public from whom their ultimate authority derives and upon whom their commands must fall" (Id.). Since public contacts, like the speech at issue here, nourish an administrator's body of ideas -- indeed are the "bread and butter of the process of administration," -- such contacts do not routinely lead to disqualification in the rulemaking setting.

627 F.2d at 1154. 4/ In applying this standard, the statements offered as grounds for disqualification must be viewed as a whole (Id. at 1170). Your speech as a whole does not reveal an unalterably closed mind on the issues involved in the CWIP rulemaking.

The speech opened with a review of FERC rate jurisdiction over the wholesale sale of electric power. It indicated that the agency's impact on the privately-owned sector of the industry

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4/ That case involved the disqualification of Chairman Pertschuk of the F.T.C. on the basis of public statements he had made expressing his strong belief in the harm advertising caused small children and in the need for stringent rules to curb that harm. For example, he stated in an interview that he "was committed to taking action on the problem of commercialization of children" and that "advertisers seize on the child's trust and exploit it as a weakness for their gain" (Id. at 1173, n.56). In a television interview Chairman Pertschuk stated that "There's a very basic question in our society, and that is . . . the extent to which children are to be treated as commercial objects . . . ." He expressed "some serious doubt as to whether any television advertising should be directed at a three or four or five-year-old, or a preschooler:"

> They're not competent to understand the nature of the message. We've never treated children as commercial objects in our society . . . (Id. at 1174, n.56).

In addition, in a letter to the head of Food and Drug Administration, Chairman Pertschuk stated that "[s]etting legal theory aside, the truth is that we've been drawn into this issue because of the conviction, which I find you share, that one of the evils flowing from the unfairness of children's advertising is the resulting distortion of children's perceptions of nutritional values . . . ." (Id. at 1191, emphasis in dissenting opinion of Judge Mackinnon). The FTC subsequently issued an NOPR concerning children's advertising.

The district court found that Chairman Pertschuk had prejudged issues involved in the rulemaking and ordered him disqualified. The court of appeals reversed, finding that Chairman Pertschuk's remarks represented discussion and perhaps advocacy of a legal theory that might support the exercise of the Commission's jurisdiction over children's advertising but that the Association had failed to demonstrate by these statements that he had an unalterably closed mind on the advertising issue.

was limited. You stated that "the Commission has a regulatory obligation to treat all of its jurisdictional companies fairly, just as it has an obligation to see that consumers are treated fairly" (speech, p. 2). The speech also revealed an unfixed view about CWIP, or the rulemaking and its effects (speech, pp. 7-8):

> The Commission currently has under way a rulemaking dealing with Construction Work In Progress (CWIP) to determine whether such construction should be placed in the rate base even though the plant has not yet begun to provide service . . .
>
> * * *
>
> What is at stake in this rulemaking? In one sense, a very great deal. On one hand, if all CWIP were immediately put into the rate base, the impact on rates would probably be substantial, and in some cases very substantial. On the other hand, if CWIP is not put in the rate base, AFUDC is accrued and added to the direct construction cost when the plant, in fact, comes on line. With the current high interest rates, it is quite probable that the accrued AFUDC will double the value of the plant in the rate base and if the plant is large in relation to the size of the utility, the effect on electric rates could be dramatic . . .
>
> * * *
>
> In another sense, however, it is not at all clear that something important is at stake . . . From the standpoint of the company, the question therefore is, would it prefer to have an increase in cash earnings now or a larger increase in cash earnings in the future? For consumers, the question is, would they rather have an increase in electric rates now or a still larger increase in the future? The answer to those questions is not at all obvious . . .

The specific remarks that APPA cited do not demonstrate a closed mind on any of the issues involved in the rulemaking. APPA deleted important qualifying words from the remark it challenged first. The complete statement is as follows (speech, p. 3):

> Rather than engage in a long discussion about such financial arcana as market-to-book ratios and interest ratios, I shall accept *for the purposes of these remarks*, that the electric utility industry is, indeed, in poor financial shape. I shall also disregard the claims -- which seem usually to be followed by the post hoc conclusion that the Commis-

> sion should therefore do nothing -- that the financial condition of the utilities is improving. *On that basis*, the fundamental question raised by the current financial problems of the electric utility industry is, can effective price regulation be reconciled with the financial needs of an electric industry supported by private capacity? (emphasis supplied).

The presumption that the electric utility industry is in poor financial condition and the dismissal of claims that it is improving were assumptions that you clearly limited to the context of the speech.

The discussion of policy or advocacy of a legal theory is not sufficient to disqualify an administrator. *Association of National Advertisers*, *supra*, 627 F.2d at 1171. An agency could not exercise its broad policymaking powers if administrators were unable to discuss the wisdom of various regulatory positions. (*Id*. at 1170). Such discussion necessarily involves broad general characterizations of reality that are labelled "legislative fact." 5/

Statements of legislative fact are often employed when legal and policy arguments are presented. (*Id*. at 1172). For example, the speech expressed the legislative fact that incurrence of certain costs is associated with the utilities' obligation of continued adequate service (speech, p. 8). Next, the speech expressed the legislative fact that the benefits of that obligation inure as much to the present consumers of electrical service as to future consumers. The statements to which APPA primarily object ["there seems to me to be little merit to arguments about intergenerational inequities" and "[i]n that connection, I disagree with the staff position -- contained in our notice of proposed rulemaking -- that there should be a presumption against the inclusion of CWIP in rate base"] were made *on the basis* of those two legislative facts (speech, p. 9). *Association of National Advertisers* teaches that expression of *viewpoints based on legal and factual* assumptions do not bind an administrator to them.

5/ The nature of legislative fact is ordinarily general, without reference to specific parties.

> Legislative facts are the facts which help the tribunal determine the content of law and of policy and help the tribunal to exercise its judgment or discretion in determining what course of action to take. (*Id*. at 1161-62, quoting Davis, *Judicial Notice*, 55 Columbia L. Rev. 945, 952-59 (1955)).

As long as the administrator is free to change his mind upon consideration of the presentations made by those who would be affected, there is no basis for disqualification (*Id.* at 1172; concurring opinion of Judge Leventhal at 1176-77). 6/

The timing of the speech is also a factor bearing on continued participation. In *Association of National Advertisers*, the court noted that Chairman Pertschuk made the challenged comments prior to issuance of an NOPR and that the Chairman "remained free, both in theory and in reality, to change his mind upon consideration of the presentations made by those who would be affected" (*Id.* at 1172). Although your speech was given after the publication of the NOPR, it preceded both the due date for the comments and oral hearings in RM81-38. There was ample opportunity for individuals to present their views after the speech was delivered and there was no showing of unwillingness to change your views upon consideration of the public presentations. Indeed, the NOPR requested that the public submit alternative CWIP policies for agency consideration. The speech does not express any views about the theories or policies suggested by the parties. 7/ Accordingly, it does not demonstrate a closed mind on the CWIP rulemaking.

6/ Judge Leventhal explained:

> It is appropriate and indeed mandatory for agency heads and staff to maintain contacts with industry and consumer groups, trade associations and press, congressmen of various persuasions and to present views in interviews, speeches, meetings, conventions, and testimony. The agency gathers information and perceptions in a myriad of ways and must use it for a myriad of purposes. With capacity and willingness to reconsider, there is no basis for disqualification (footnote omitted).

7/ In a subsequent speech delivered January 22, 1982, to "Wall Street Utility Group," you specifically noted the following in regard to the CWIP rulemaking:

> We have received numerous written comments in response to our Notice of Proposed Rulemaking, and have also heard oral presentations. Reply comments were due January 15, 1982. We will carefully consider these written and oral pleadings in arriving at a decision.

A comparison of your speech with those found not to warrant disqualification in other cases further supports the conclusion that disqualification is not warranted here. For example, although Chairman Pertschuk stated that he was "committed" to taking action on the problem of commercialization of children, the court ruled that such statements did not demonstrate that he was unwilling or unable to consider rationally argument that a final rule was unnecessary.

The court reached a similar result in United Steel Workers of America v. Marshall, 647 F.2d 1189, 1208 (D.C. Cir. 1980), cert. den., 101 S.Ct. 3148 (1981). There, Assistant Secretary of Labor Bingham discussed the OSHA lead standard then pending before the Department of Labor in a speech delivered to a union group which was "passionately involved" in the rulemaking proceeding (Id. at 1208). Her remarks referred to the dangers of lead, 8/ the economic feasibility of the lead standard, 9/ and the need for a "medical removal protection provision," 10/ which were contested issues in the proceeding. Although the court believed that she served her agency poorly by making statements so susceptible to an inference of bias, it ruled that the statements represented discussion and she had not demonstrated an unalterably closed mind. The court reasoned that mere proof that she had taken a public position, or expressed strong views, or held an underlying philosophy with respect to an issue in dispute did not overcome the presumption that an administrative official is objective and "capable of judging a particular controversy fairly on the merits" (Id., quoting United States v. Morgan, 313 U.S. 409, 421 (1941)). APPA tries to distinguish the United Steel Workers case on the basis that the Assistant Secretary gave the speech after she had voted on the standard [but before the Secretary of Labor had signed it]. However, the court noted that "[h]ad she made these remarks before the rulemaking began or while OSHA was still receiving public comments, we might still have had to strain precedent to find grounds for her disqualification" (Id., at 1210).

8/ "I bet I could go down to the hospitals of this city and find a worker that is undergoing kidney dialysis, and I'll bet you a dinner that some of those workers have been in lead plants" (Id.).

9/ "I tell you I can smell a phony issue when I see one . . . and to say that safety and health regulations are inflationary is phony" (Id.).

10/ "Well, I learned to spell those words a long time ago on the Coke Oven Advisory Committee, and if you want to know how I feel about it, you need only look up my comments during those Committee hearings. As far as I am concerned it is impossible to have a lead standard without it" (Id.).

In a somewhat different context, the Supreme Court found that a schoolboard's participation in teacher contract negotiations that preceded and led to a strike did not prevent the board from conducting impartial disciplinary hearings against the striking teachers. Joint School District No. 1 v. Hortonville Education Association, supra, 426 U.S. at 493. The court held that mere familiarity with the facts of a case gained by an agency in the performance of its statutory role did not disqualify a decisionmaker, nor was he disqualified simply because he took a public position on a policy issue related to the dispute.

The Supreme Court also rejected claims that statements to Congress by FTC Commissioners in which they equated a particular trade practice with illegal price fixing showed fatal prejudgment of the issue when it arose in a subsequent investigation proceeding before the agency. FTC v. Cement Institute, 333 U.S. 683, 701 (1948). The Court held that the earlier statements did not necessarily mean that the minds of the members were irrevocably closed. The Court found significant the fact that the industry had an opportunity after the statements to Congress were made to present evidence and argument to persuade the FTC that its business practices were legal.

In sum, because your speech indicated neither unwillingness to consider comments in the RM81-38 proceeding, nor unwillingness to abandon any of the views expressed in the speech in light of those comments, there is no reason to infer an unalterably closed mind on the issues in the CWIP proceeding.

DOE/PE/70106-1

Long Term Consumer Impacts of Electricity Rate Regulatory Policies

January 1983

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Acknowledgements

The author would like to thank the management and personnel of the six participating electric utilities for their excellent cooperation in providing the information required to conduct the analyses within this report.

The author would also like to thank Professor Malcolm Harris for his assistance with the Regulatory Analysis model (RAm) used to generate the report's forecasting results. Vlad Jenkins provided able assistance running the model.

I. INTRODUCTION

Can "rate suppressive" electric utility regulation raise electricity rates higher than they otherwise would be under more "fair and reasonable" regulation and thereby make ratepayers worse off?

This study examines that hypothesis within the context of several regulatory penalties which rate suppression imposes on the electricity consumer through its distortive effects on the utility's investment and operating decisions and through a "risk premium" that rate suppression appears to impose on a utility's cost of capital.

Section II describes and analyzes the sources of rate suppression within the context of state public utility commission (PUC) regulation of the electric utility industry and the PUCs' regulatory mandate.

Section III examines the effects of rate suppression on an electric utility's investment and operating strategy within the context of the utility's twin (and often contradictory) responsibilities to ratepayers and shareholders. In doing so, the section presents three regulatory penalties associated with rate suppression -- a fuel penalty, a cost of capital penalty, and a reliability penalty. The section also discusses the sensitivity of these penalties to several parameters, most notably a utility's generation mix and its projected load growth.

Section IV develops a rate-forecasting methodology to measure the regulatory penalties imposed by rate suppression. Two alternative regulatory scenarios are defined: a "rate suppressive" regulatory climate in which a utility can expect to earn several hundred basis points below its market cost of capital and a "capital attraction" scenario in which a utility can expect to earn its market cost of capital. The six utilities participating in the forecasting analysis then provide alternative investment and operating strategies under the two specified regulatory scenarios.

In the rate suppressive scenario, each of the six utilities pursues a strategy of "capital minimization," undertaking as little capital investment as its regulatory mandate permits. In contrast, in the capital attraction scenario, each of the utilities pursues a strategy of "capital optimization," undertaking a significantly more capital-intensive program.

In Part E of Section IV,, a ratemaking model in wide use among the PUCs is used to forecast electricity rates and critical utility financial indicators under the two alternative regulatory regimes ("rate-suppression" versus "capital attraction") for the two alternative investment strategies (capital minimization versus capital optimization).

The cost to consumers for each utility -- annual revenue requirements over the forecast period under the two regulatory scenarios -- are analyzed using standard discounting procedures. It appears that for a wide range of plausible discount rates, rate suppressive regulation can indeed raise electricity rates higher than they otherwise would be in a net present value sense.

At the same time, service reliability falls dramatically while consumption of oil and natural gas is considerably higher under rate suppression than it would otherwise be.

The paper concludes with a summary.

II. Rate Suppressive Versus Fair and Reasonable Regulation

What is rate suppressive regulation and how can it penalize rather than benefit electricity ratepayers? To answer these questions first requires an awareness of the PUCs regulatory mandate and an understanding of how the basic rate-making process works.

A. The PUCs' Regulatory Mandate

State PUC regulation has it origins in the Populist and Progressive movements of the late 1800s and early 1900s, a period when America was undergoing rapid industrialization and urbanization and the nation's utilities -- water, gas, telephone, and electricity -- were undergoing increasing public scrutiny.

The reformist rationale for electric utility regulation was a classic statement of the "market failure" model of government regulation: since the unit production cost of electricity fell as the size of a powerplant increased, it was argued that these "economies of scale" would create "natural monopolies." That is, large utilities with lower costs would eventually drive out smaller rivals, leaving ratepayers at the mercy of monopoly pricing. Monopoly pricing would in turn lead to a misallocation of national resources and an exploitation of the ratepaying public.

From a wide range of options -- franchising, public ownership, licensing -- most states chose PUC rate of return regulation to "correct" the market failure of natural monopoly. The bargain that was struck between the PUCs and the electric utility industry was simple: the utilities were granted exclusive service territories (i.e., monopolies) while the PUCs were obligated to allow the utilities to earn a "fair and reasonable return" on their investments while insuring consumers reasonably reliable electricity service.

As it has been interpreted in several landmark court decisions, this "fair and reasonable" standard has come to mean that a regulated electric utility must be allowed by its PUC to earn a return sufficient to attract capital and maintain its financial integrity.[1] This "capital attraction" test provides a useful definition of "fair and reasonable regulation" and the PUCs' regulatory mandate: electric utilities must be allowed the opportunity, subject to prudent and competent management decisions, to earn their cost of capital on both existing and new investment. To the extent that the utility is denied this opportunity, regulation may be said to be rate suppressive.

B. Rate of Return Regulation

Today, PUCs in all 50 states and the District of Columbia have the authority to regulate the 100-plus private, investor-owned electric utilities which provide over 80 percent of the electricity generated in this country.

The vehicle through which the PUCs seek to fulfill their regulatory mandate is rate of return regulation. While the ratemaking process is complex and varies from state PUC to state PUC, the basic ratemaking concept is that a utility should be allowed to recover its operating expenses plus a reasonable profit. That profit is the cost of equity capital used to finance the company's investments. This profit is calculated as a return on investment (called the "rate base"). The basic formula (ignoring taxes and depreciation) can be represented by:

$$RR_t = [r_{at}RB_t] + [r_{ft}F_t + r_{ppt}PP_t + OM_t] \qquad [1]$$

where the subscript *t* indicates the period for which revenue requirements are being calculated and where:

RR_t = revenue requirements
r_{at} = the allowed rate of return
RB_t = the rate base
F_t = the quantity of fuel consumed
PP_t = the quantity of purchased power consumed
OM_t = operations and maintenance expenses
r_{ft} = the price of fuel
r_{ppt} = the price of purchased power

Conceptually, one can think of this formula in two parts. In the first bracketed term, the *capital component* consists of the return on the rate base, which is net plant and equipment and working capital. In the second bracketed term, the *expense component* consists of the variable operating costs (VOCs) -- fuel, purchased power, and operations and maintenance expenses that are associated with plant operation and meeting a given level of electricity demand.

On the basis of an assumed electricity demand (which allows the utility to estimate its VOCs for the rate period), the PUC uses [1] to determine annual revenue requirements RR_t, which equal the total amount of revenue that a utility must collect from its customers to earn a fair return on its investment and pay its expenses for the electricity it is expected to supply in the rate year. Once revenue requirements are determined, the PUC then determines the price or rate that a utility is allowed to charge for electricity according to the formula:

$$P_{dt} = RR_t/Q_{dt} \qquad [2]$$

where P_{dt} is the price of electricity and Q_{dt} is the quantity of electricity that ratepayers are assumed to demand or consume in the rate year.

C. The PUC's Optimization Problem and Sources of Rate Suppression

As discussed above, the PUC's regulatory mandate is of a dual nature: it has a responsibility to provide consumers with low-cost, reasonably reliable electricity and it has an obligation to grant utilities the opportunity to earn a rate of return sufficient to attract capital investment.

In a one-period model of the PUC's optimization problem, the "least-cost requirement" translates into a mandate to minimize revenue requirements (and from [2] therefore the price of electricity) while the capital attraction test means that the utility must be allowed to earn its market cost of capital. Formally, the PUC's optimization problem may be written:

$$\text{Minimize} \quad RR_t = r_{at}RB_t + [r_{ft}F_t + r_{ppt}PP_t + OM_t] \qquad [3]$$

$$\text{Subject to:} \quad r_{rt} = r_{mt}$$

where r_{rt} equals the utility's realized rate of return and r_{mt} equals its cost of capital.

Thus, in this simplest form of the PUC's optimization problem, the commission chooses the allowed rate of return r_{at} in the rate year t so as to minimize revenue requirements subject to the constraint that the utility's realized rate of return r_{rt} equals its weighted average cost of capital r_{mt}.

The utility's realized rate of return in turn may be written:

$$r_{rt} = (RR_t - VOC_t)/RB_t \qquad [4]$$

where the variable operating costs VOC_t equal the sum of the fuel, purchased power, and operations and maintenance expenses ($F_t + PP_t + OM_t$). Similarly, the utility's weighted average cost of capital may be written:

$$r_{mt} = r_{dt}D_t + r_{et}E_t \qquad [5]$$

where r_{dt} is the embedded cost of debt, D_t is the percentage of debt, r_{et} is the market cost of equity capital, E_t is the percentage of equity capital and $D_t + E_t$ equals total capital, or the rate base, RB_t.*

From [1] through [5], we can define rate suppression more precisely as the case when $r_{rt} < r_{mt}$.** In this one-period model of the ratemaking process, this can occur for several reasons.

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*This abstracts from financial and regulatory practices that can cause rate base and capital to diverge.

**This assumes that all utility expenses have been the result of "prudent and competent management" as discussed above in the definition of the PUC's regulatory mandate. For further discussion, see the exposition of the fourth source of rate suppression below.

1. An indequate allowed rate of return, r_{at}, is the first source of rate suppression. Under the assumptions of zero inflation (or perfectly anticipated inflation), instantaneous ratemaking, prudent management, and perfectly forecast (or correctly assumed) demand, it can be shown that the realized rate of return r_{rt} will exactly equal the allowed rate of return r_{at}.[2] Thus, rate suppression can only result if the PUC sets the allowed rate below the utility's market cost of capital.

In theory, such an action would violate the PUC's "capital attraction" constraint in equation [3]. However, in practice, there is considerable evidence to suggest that some PUCs have, in the past, done precisely that, i.e., set the allowed rate below the market rate.

For example, using a commonly accepted discounted cash flow approach to calculate the cost of equity capital, economists Eugene Brigham and Dilip Shome have estimated that the utility industry should have been allowed to earn a return on equity of roughly 14% during the period 1974 to 1980.[3] However, the average allowed return for the industry for the period was 13%.[4]

An inadequate allowed rate of return is only the tip of the rate suppression iceberg, however. While the allowed return has often been set below the market return by the PUCs, the realized return of the industry has been even lower -- 11% compared to the allowed return of 13% for the 1974-80 timeframe.[5] This statistic suggests that even if the allowed return is set correctly, the realized return may diverge from the market return. Understanding how this divergence can occur provides us not only with a number of additional sources of rate suppression but also a more realistic catalogue of the policy choice variables a PUC actually has at its disposal.

2. Regulatory lag is a second common source of rate suppression -- de facto rather than de jure. Such lag measures the period between the time a utility files for a rate increase and the time that a rate increase results in increased revenues to the company. Generally court-like regulatory proceedings are required before a rate increase is granted. Several months or longer are required to prepare for and hold these hearings. Among the PUCs, average regulatory lag ranges from six months in states like Massachusetts and Connecticut to 10 months or more in states like New Mexico and Ohio.[6] Thus, contrary to our initial assumption above, the ratemaking process is far from instantaneous.

Rate suppression results from regulatory lag when the PUC fails to account for inflation in the calculation of revenue requirements. For example, the use of an historical test year is a common PUC practice: fuel, purchased power, and O+M expenses for the current year's rates (year t) are based on last year's actual expenses (year t-1). However, in the presence of inflation, expenses are likely to be understated. Thus, even if the allowed rate of return is set equal to the market rate, the failure of the utility to completely recover expenses means that its realized return will fall short of its allowed return.

The PUC can use a number of policies, separately or in combination, to offset this erosion of earnings due to regulatory lag.[7] Most directly, it may use a current or future test year which bases the VOCs on inflation-adjusted historic expenses, i.e., it sets the VOCs in [1] equal to their projected level based on forecasted prices and quantities.

Alternatively, it can simply calculate an allowance based on the difference between historic and actual expenses; this allowance is simply added to revenue requirements. Another approach is to grant interim rate relief. In this option, the utility's requested rate increase or a portion thereof is put into effect immediately. Once the case is adjudicated in the rate hearing process, adjustments in rates are made to reflect any disagreement between the utility's interim rates and the PUC's eventual decision.

Finally, the PUC may use a replacement cost rather than an original cost rate base. In particular, when it calculates the value of the rate base RB in [1], the PUC may choose to use the original cost of plant and equipment less depreciation (the most common convention). Alternatively, it may elect to adjust the net cost of plant and equipment for inflation to reflect its replacement cost. Obviously, in the later case, revenue requirements will be higher in the presence of inflation, everything else being equal. Using a replacement cost rate base, it is possible to set the allowed return below the market return and still have the realized return equal the market return; this can happen if the increase in the rate base in [1] offsets the deficiency in the allowed return.[8]

3. Incomplete automatic adjustment clauses represent a third source of rate suppression. There are two major varieties of automatic adjustment clauses in use today to cope with inflation. The "fuel adjustment clause" (FAC) typically allows the utility to immediately pass-through some portion of any increase in fuel expenses above those included in the base rates, i.e., in the original rate calculation, in the form of a fuel surcharge added to rates. Similarly, the purchased power adjustment clause (PAC) allows the utility to pass through unanticipated costs of purchasing power from other sources of electrical generation.

Both FACs and PACs are in wide use among the PUCs today. However, there are considerable differences in the administration of such clauses by the PUCs, differences which can result in rate suppression.[9]

For example, in some states, a hearing is required before fuel or purchased power expenses are passed through. In effect, this hearing process introduces a different type of regulatory lag into the recovery of these expenses. Even where there is no formal hearing requirement, actual fuel costs are not known until after the fact. The resulting discrepency between costs and rates is normally added to a deferred account or a balancing account to be recovered later. As a result, while the utility recovers its costs, it loses the time value of the funds used to finance the fuel or purchased power expenses. For some utilities, these expenses are considerable. United Illuminating in 1979 suffered a $16 million cash drain as oil prices rose and its recovery of these fuel costs lagged. These funds were not fully recouped until two years later. The carrying cost of $16 million at a pretax cost of 17% is $2.7 million. Moreover the net cash outflow was substantial relative to their $21 million of earnings.

As a more direct source of rate suppression which can be incorporated into [1], some PUCs only allow a fraction of fuel or purchased power expense recovery. However, the result of using such incomplete automatic adjustment clauses is rate suppression: the utility's costs are once again understated and the realized return falls below the required return, even if the allowed return is set correctly.

4. The disallowance of certain operation and maintenance expenses is a fourth source of rate suppression. For example, it is a common practice in a number of states for the PUC to deny the utility the recovery of any expenses on advertising.

More perniciously, from the standpoint of the utility, some PUCs have recently begun to disallow certain expenses that they allege are associated with "bad" or "imprudent" management. The most spectacular case is the accident at Three Mile Island in which the PUC for three years refused to allow General Public Utilities to charge its customers, not only for the cost of the cleanup, but also for much of the incremental fuel costs associated with replacing power for customers from the closed nuclear plant. However, the practice of disallowing certain O+M expenses is not confined to nuclear accidents.

Utilities have, of course, been guilty of imprudent management and when they are, the costs of those imprudent decisions should be denied by the PUC and rightly borne by risk-bearing shareholders. However, regardless of blame, in either case the result is rate suppression.

5. The denial of capital investment in the rate base is a fifth source of rate suppression. As with the disallowance of O+M, the PUC can find justification in the legal language of its regulatory mandate to refuse to allow certain capital investments into the rate base to earn a return.

In particular, in many jurisdictions, in order for a plant to be allowed in the rate base, it must be considered "used and useful." In recent years, the meaning of this seemingly unambiguous phrase has been clouded by the new economics of petroleum displacement, i.e., it is now often cheaper to build, operate, and fuel a new coal or nuclear powerplant than it is to continue operating an existing baseload oil plant. Thus, a new powerplant may not be necessary to keep the lights on so that it is not "useful" in the reliability sense. But such a new plant may be "useful" in the economic sense in that it would help to lower rates.

The denial of plant in the rate base has become an increasingly familiar part of the regulatory landscape. For example, the Missouri PUC refused to allow Kansas City Power and Light to earn a return on a large new coal plant on the grounds that the plant was unnecessary for reliability reasons. As a consequence, the utility was unable to earn a return on the entire plant for several years until the decision was reversed in subsequent cases.

Obviously, the option of denying plant in the rate base creates not only added uncertainty for the utility executive but also a disincentive to pursue an economically optimal construction program.

6. Overestimated assumed electricity consumption is a final source of rate suppression. In particular, the variable operating costs in [1] are based in part upon an assumed electricity demand as is the calculated price of electricity in [2]. If actual consumption is less than assumed demand Qdt, and everything else is set correctly, actual revenues will fall short of revenue requirements and the realized return will be less than that allowed.

During the 1970s, overforecasting of demand was a frequent occurrence as both the utilities forecasting demand and the PUCs monitoring those forecasts failed to fully anticipate the amount of conservation that rising energy prices elicited. In recent years, some innovative utilities have successfully argued for a conservation adjustment, a compensatory PUC policy which adjusts for the problem of revenues lost due to misforecast demand.

D. The PUC's Optimization Problem: A Restatement

1. The Extended One-Period Model

The above discussion suggests that the PUC's optimization problem as presented in [3] should be rewritten to incorporate the additional policy variables it actually chooses to determine revenue requirements (and hence rates). Focusing on the major PUC policy variables of regulatory lag, choice of rate base, and the incomplete recovery of expenses, we may write the revised objective function:

$$\text{Minimize} \quad RR_t = a[r_{at}(bRB_t) + cr_{ft}F_t + dr_{ppt}PP_t + eOM_t] \qquad [6]$$

subject to: $r_{rt} = r_{mt}$ [strong capital attraction constraint] [7]

or

$r_{rt} = r_{mt} - v$ [weak no-bankruptcy constraint] [8]

In this formulation, the term a is assumed to be an all-encompassing shorthand term for regulatory lag where a=1 implies regulatory lag is zero; as a falls below 1, lag increases. Similarly, the term b reflects the choice of rate base where b=1 indicates original cost and b>1 indicates some adjustment for inflation to fair value or replacement cost. The terms c, d, and e reflect the fraction of actual fuel, purchased power, and variable O+M actual allowed as expenses, respectively. (The problem of incorrectly assumed demand is ignored in this formulation, although it could be incorporated into the a term, e.g., a>1 might imply an elasticity adjustment.)

In addition, the regulatory constraint has been rewritten to reflect the possibility that the PUC may, in any given rate period, violate the "capital attraction" constraint and merely obey the lesser constraint that the utility not be allowed to go bankrupt. Notationally in equation [8], this constraint means that the utility earns its market return minus v, where v is large enough so that the utility earns the minimum required income for continued operation.

Note that if a=b=c=d=e=1, the formula [5] collapses to [3] and the PUC must set the allowed rate of return to the market rate if it does not wish to violate the strong capital attraction constraint of [7]. However, the capital attraction constraint can also be met by manipulating the other choice variables. For example, the PUC can offset a below market allowed rate of return ($r_a<r_m$) by specifying a replacement cost rate base (b>1). Similarly, the effects of regulatory lag (a<1) can be offset by a higher allowed return. At the same time, the PUC may set the allowed return less than the market return and/or set any one of the a through e terms less than 1 (or both) without violating the less binding, weak no-bankruptcy constraint.

These observations suggest that the range of policies that a PUC has at its disposal may have a significant effect on a utility's investment and operating strategy through their effect on the utility's perceived input prices. For example, if the allowed rate of return is set below the market rate of return ($r_{at}<r_{mt}$), the utility may have a disincentive to undertake capital investment. At the same time, if the PUC only allows partial recovery of fuel costs (c<1), the utility's effective price of fuel is more than it actually pays and that may lead to a bias away from fuel inputs.

The important point that emerges in this more realistic reformulation of the ratemaking process is that there is a direct link between PUC policy choices and the investment and operating strategy of a utility. In order to forge that link--which will be discussed in full detail in the following section--it is useful to make one last refinement to the PUC's optimization problem. We must acknowledge the fact--typically ignored in academic treatments of the subject--that the ratemaking process occurs over time and that rates determined in one period are not independent of rates determined in a subsequent period.

2. A Dynamic Model of the PUC Optimization Problem

In the static, one-period model, the PUC minimizes revenue requirements according to formula [6] for the rate year t; the implicit assumption is that once annual revenues and rates are determined, they remain in effect until the utility files again for a rate case. At that time, the PUC once again performs its optimization independent of the solution to the original problem.

However, this static model ignores the dynamic interdependency between the PUC's policy mix and the utility's investment and operating strategy over time. As we shall discuss in the next section within the context of the utility's optimization problem, the PUC's specifications of r_{at}, a, b,c,d, and e in rate year t are important determinants of a utility's choice of inputs RB, F, PP, and OM since these terms in part determine the utility's effective input prices.

For example, it can be shown that if the PUC sets the allowed rate of return equal to the utility's market rate ($r_a = r_m$), determines rates with zero regulatory lag ($a = 1$), uses an original cost rate base (b=1) and allows the utility to pass through 100 percent of all expenses (c=d=e=1), a profit-maximizing utility will respond with an investment and operating program that is economic in the sense that costs are minimized for the forecast output. See the discussion of the utility's optimization problem in the following section and Appendix One).

However (as we shall demonstrate below in the discussion of the utility's optimization problem subject to regulatory constraint), if one or more of these conditions are not met, distortions in the utility's choices of inputs result which can drive the solution away from the cost-minimizing optimum. For a concrete example, suppose that the allowed return is set below the market return and the PUC allows full pass-through of fuel costs. Faced with these price signals, the utility may prefer continued operation of an existing oil plant (with correspondingly higher fuel costs) to the conversion of that plant to coal (with correspondingly higher capital but lower fuel costs), even though the failure to convert would raise its total costs.

The PUCs are aware of this interaction, and it would be a misrepresentation to ignore its dynamic implications. To capture this interaction and incorporate the time value of money, we can rewrite the final version of the PUC's optimization problem as follows:

$$\text{Minimize } RR = \int_{t=0}^{T} a[r_{at}(bRB_t) + cr_{ft}F_t + dr_{ppt}PP_t + eOM_t] \quad e^{-r_{dt}t}dt \qquad [9A]$$

$$\text{subject to:} \quad r_{rt} = r_{mt} \quad \text{[strong capital attraction constraint]} \qquad [9B]$$

or

$$r_{rt} = r_{mt} - v \quad \text{[weak no-bankruptcy constraint]} \qquad [9C]$$

That is, for its discount rate r_{dt}, the PUC minimizes the net present value of revenue requirements subject to either the strong condition of the capital attraction constraint or the weaker no-bankruptcy constraint.*

This formulation will serve as the normative standard in the forecasting analysis below, that is, (for a given assumed demand) minimizing the net present value of revenue requirements will be assumed to be synonymous with maximizing the welfare of ratepayers.

The primary virtue of this formulation is that it incorporates expectations into the PUC problem: the PUC can "trade off" higher electricity prices in the near term for reduced rate increases in the future if it expects that such higher prices will elicit a more economic investment and operating strategy by the utility (a possibility that is discussed in great detail in the next section). This expectation is reflected in the fact that, as previously mentioned, each of the components of the right hand side of [9A]--the level of capital (RB), fuel, purchased power, and O+M-- are dependent on relative input prices as perceived by the utility.**

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*The first "e" in equation 9A is the O+M adjustment but the second "e" is the familiar notation for continuous time discounting.

** Formally, the PUC is aware that:

$RB = RB(r_{rt}) = RB\ (r_{at}, r_{mt}, a, b, c, d, e)$

$F = F(r_{at}, r_{mt}, a, b, c, d, e)$

$PP = PP(r_{at}, r_{mt}, a, b, c, d, e)$

$OM = OM(r_{at}, r_{mt}, a, b, c, d, e)$

At the same time, this dynamic formulation also provides us with a final source of rate suppression: if the PUC's discount rate, r_{dt}, is different from that of the utility, the optimization problems may never converge to the same solution, even if all other conditions are met.

For political reasons, a PUC may have a much higher "effective" discount rate. The reason is that PUC commissioners typically serve relatively short terms compared to the cyclical pattern of powerplant construction and their long run effect on rates. For example, the average PUC term is 4 to 6 years while it takes 8 to 14 years to build a powerplant and another thirty years of plant operation before the decisions affecting that plant are completely reflected in rates. This truncated time horizon can be thought of as a higher effective discount rate. But if the PUC's discount rate diverges from the utility's market cost of capital, the solution to the utility's optimization problem will diverge from the cost-minimizing solution, even if all other regulatory variables are set correctly. In particular, if the discount rate is above the utility's market cost of capital, the result will be rate suppression, other things held constant.

E. Summary

In summary, we have presented the PUC's optimization problem and illustrated seven sources of rate suppression. These sources are listed in Table 1.

In the next section, we develop more fully an hypothesized linkage between short run rate suppression and higher long run rates through an examination of the utility's optimization problem subject to regulatory constraints.

TABLE ONE: SOURCES OF RATE SUPPRESSION

1. The allowed rate of return is set below the market rate of return ($r_{at}<r_{mt}$)

2. Regulatory lag in the presence of inflation ($a<1$)

3. Incomplete automatic adjustment clauses

   - fuel ($c<1$)
   - purchased power ($d<1$)

4. The disallowance of certain operations and maintenance expenses ($e<1$)

5. The denial of capital investment in the rate base (RB below actual level of capital investment)

6. Overestimated assumed electricity consumption (price of electricity set too low)

7. The PUC's discount rate is higher than the utility's market rate of return ($r_{dt}<r_{mt}$)

III. The Regulatory Penalties Imposed By Rate Suppression

Having examined the numerous ways in which rate suppression can arise, we now discuss the equally numerous ways rate suppression can impose several regulatory penalties on the consumer through its effect on a utility's investment and operating strategy.

This discussion will take place on two levels. First, using the tools of production economics, we mathematically examine the utility's optimization problem to illustrate several general distortions in input choices that may arise from rate suppression, e.g., an incentive to shun capital investment.

We then observe the utility executive's actual decision-making process to demonstrate how these general input distortions may translate into specific kinds of noneconomic investment and operating decisions and in turn, result in an economic penalty on the ratepayer. For example, in the utility executive's strategic planning, a bias away from capital investment may take the guise of a reliance on purchased power, the non-retirement of existing plant, or the construction of low-capital intensive combustion turbines. However, any of these options is likely to result in higher rates to the consumer.

In this demonstration, we will indicate how these specific input distortions, coupled with a more external effect of rate suppression on a utility's cost of capital, may result in three regulatory penalties -- a fuel penalty, a cost of capital penalty, and a reliability penalty.

[Note to the reader: the technical material in Section III-A may be ignored by the laymen without loss of continuity.]

A. The Reverse Averch-Johnson Effect and Other Input Distortions

The effect of rate suppression on a utility's investment and operating strategy may be examined with the framework of the familiar Averch-Johnson (AJ) model.

The original AJ model provides a simple depiction of the regulatory process for a utility operating under a rate-of-return constraint. The utility is assumed to produce one output, e.g., electricity, and to use two inputs, labor and capital, which are available in unlimited quantities at a fixed price per unit.

The regulator is assumed to have only one policy variable at his disposal: he sets the allowed rate of return, r_a, at a "fair and reasonable" level which is further assumed to be below that which the utility would earn in an unregulated market, i.e., as an unconstrained profit-maximizing monopolist. Of the several propositions demonstrated with the AJ model, perhaps the most well-known (and the one of most relevance here) is as follows:

> When the allowed rate of return is set ABOVE the market cost of capital, the firm will employ a capital-labor ratio which is LARGER than that which minimizes costs for a specified output.

The rationale of this "AJ effect" is that the higher allowed return provides an incentive for the utility to increase its use of capital relative to its other input. Because of the "AJ effect," the utility builds more plant than it needs to provide least cost service.

Interestingly, the AJ literature of the 1970s never formally answered the reverse question of what the utility would do if, rather than being allowed to earn a return greater than its market cost of capital r_m, it was allowed to earn a return less than its market cost of capital.* Instead, for this case, the utility's strategic response was simply assumed away: for $r_a<r_m$, the utility withdrew immediately from the market.

However, by assuming immediate "exit," the AJ theoreticians ignored several fundamental facts of the utility industry. First, as part of its regulatory mandate, a utility has an obligation to provide service to customers, an obligation which can not immediately be severed, either legally or politically.

Second, and perhaps of greater importance, the industry is characterized by long-lived assets. These assets--primarily large, capital intensive powerplants for electric utilities--have little alternative use. Thus, even if a regulated utility wanted to (and its regulators allowed it to) withdraw from the market, it is unlikely it could sell off all its assets to do so. Nor could it employ those assets elsewhere so that capital would be effectively "sunk". In this "putty-clay" world of immovable assets, it is therefore plausible that, rather than immediately exit, the firm might prefer to continue operating its existing plant. However, it is equally plausible that it would make no further capital investment (other than the minimum necessary to continue its operation). It is this logic which forms the basis of the reverse AJ hypothesis.

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* Of course, this oversight was a "forgivable sin" in the regulatory environment in which the AJ model was nurtured. Specifically, during the 1960s, the major utility industries (electric and telephone) realized increasing economies of scale and declining marginal costs so that they consistently earned a return above what many considered fair and reasonable. It wasn't until the 1970s era of OPEC and inflation that the reverse question of rate suppression became a regulatory reality.

> The Reverse AJ Effect: When the allowed rate of return is set BELOW the utility's market cost of capital (type one of rate suppression), it will employ a capital-other input ratio which is SMALLER than that which minimizes costs for a specified output.

Here, then, is our general theoretical proposition about the effects of rate of return suppression on capital investment, where we have substituted "other input" for labor since, compared to fuel, purchased power, and O+M, labor constitutes a trivially small contribution to the production process. (For the moment, we also have ignored PUC policies other than the setting of the allowed rate of return, e.g. regulatory lag.)

To demonstrate the reverse AJ effect mathematically, we follow the approach of Baumol and Klevorick (but adapt their notation to ours). Initially, we assume a simple two-input model where the utility employs capital RB and fuel F (one of the "other inputs") to produce a quantity of electricity Q that consumers are forecast to demand (and actually consume) at a price P specified by the regulator. Thus, both the price of electricity and the quantity are fixed along with input prices r_m (the market cost of capital) and r_f (the cost of fuel). Under these conditions, the utility's objective function may be written:

$$\text{Maximize } \Pi = PQ - r_m RB - r_f F \qquad [10]$$

$$\text{Subject to } [PQ - r_f F]/RB = r_a \qquad [11]$$

That is, the utility chooses a rate base RB and fuel inputs F so as to maximize profits Π subject to the regulatory constraint that its realized rate of return r_r not exceed the "fair return" r_a allowed by the regulator. Following the convention of the AJ literature (for mathematical tractability), the regulatory constraint [11] is assumed to hold as an equality.

To begin our proof of the reverse AJ effect, it can be easily shown that for a specified output Q, cost minimization leads to first-order efficiency conditions which yield:

$$r_m/r_f = Q_{RB}/Q_F = MRS_{RB,F} \qquad [12]$$

where Q_{RB} denotes dQ/dRB and Q_F denotes dQ/dF, the marginal products of capital and fuel. Thus, the utility employs capital and fuel in a ratio such that the input price ratio equals the ratio of their marginal products, i.e., the marginal rate of substitution between the two inputs ($MRS_{RB,F}$).

It can likewise be shown that for the regulated firm, the first order conditions for the employment of capital and fuel yield the condition:

$$\frac{Q_{RB}}{Q_F} = \frac{r_m}{r_f} + \frac{\Psi}{(1 - \Psi)} \frac{r_m - r_a}{r_f} \tag{13}$$

where Ψ is the Lagrangian multiplier and, by the assumptions of the AJ framework $0 < \Psi < 1$.

For the case of rate suppression, $r_m > r_a$, the utility's market cost of capital exceeds its allowed rate (which in the AJ model is assumed to equal the realized rate). With $0 < \Psi < 1$ and $r_m, r_f > 0$ (by assumption), it follows that:

$$\frac{Q_{RB}}{Q_F} > \frac{r_m}{r_f} \tag{14}$$

Since the marginal rate of substitution of capital for fuel is greater than the price ratio, it likewise follows that, with a diminishing marginal rate of substitution of capital for fuel for a fixed output level, [14] can hold if and only if the relative use of capital is less than in the cost minimizing case. In other words, under rate suppression, the utility reduces its capital/fuel ratio--the reverse AJ effect!

Under extreme cases of rate suppression, it may be inferred that the firm might stop investing in capital altogether. Within the context of this study, we refer to this phenomenon as a "strategy of capital minimization." Such a strategy leads to the eventual withdrawal of the utility from the market, just as assumed by the AJ model. However, this process of noninvestment and the wearing out of plant will occur over a relatively long time for an industry such as that of the electric utilities.

2. Other Input Distortions

The AJ framework may be easily extended to illustrate other input distortions which may arise from the PUC's choice of policy mix. In this extension, we drop the assumption of the AJ model that rate of return is the only policy variable a PUC chooses.

Consider the case where the firm is allowed to earn its market cost of capital ($r_m = r_a$) but it is only allowed to recover a fraction of its fuel expenses. Recalling the PUC's optimization problem as expressed in [9], that means that the regulatory factor c is less than one. Including c in the utility's optimization problem, the first order condition for the employment of fuel is:

$$MRP_F = cr_f \qquad [15]$$

That is, the utility employs fuel such that its marginal revenue product equals its price times the regulatory factor c.

For $c = 1$, $MRP_F = r_f$, which is the efficiency condition for cost minimization. However, for $c<1$, $MRP_F < r_f$. Thus, the firm's marginal revenue product for fuel is less than the input price. But this can only happen if the firm uses less fuel (relative to other inputs) than in the cost minimizing case. Hence, $c<1$ leads to an input distortion in the form of a bias away from fuel (relative to other inputs).

This conclusion may be easily generalized to other inputs such as purchased power and O+M. For example, if the regulatory factors d and/or e are set different from 1, the utility will employ the particular input in a way that increases costs for the output produced. Similarly, if $c<d$, the utility may favor purchased power over fuel expenses while if $e<1$, the utility may also reduce O+M.

3. A Dynamic Model of the Utility's Optimization Problem

As a concluding theoretical comment and as a counterpart to the PUC's optimization problem, it is useful to present a final specification of the utility's optimization problem which incorporates the time value of money and which acknowledges explicitly that a utility's investment and operating strategy involves choosing combinations of inputs over time. The dynamic model of the utility's optimization problem may be written:

$$\underset{RB,\ F}{\text{Maximize}}\ \Pi = \int_{t=0}^{T} \left[a[P_tQ_t - br_{mt}RB_t - cr_{ft}F_t - dr_{ppt}PP_t - e \quad OM_t] \right] e^{-r_{mt}t}\, dt \qquad [1$$

$$\text{Subject to} \quad r_{rt} = [P_tQ_t - VOC_t]/RB_t = r_{at} \qquad [1$$

That is, the utility chooses capital RB and its variable operating costs (VOC), i.e., fuel, purchased power, and operations and maintenance, in each period t so as to maximize the net present value of profits (for its discount rate r_m) subject to a rate of return constraint and other PUC policies, e.g., regulatory lag ($a<1$). This specification recognizes both the full range of policy constraints (a,b,c,d,e) a PUC imposes on the utility and the complete range of input choices--its investment and operating strategy--with which a utility responds to those constraints.

The insights of the static, one-period AJ model coupled with this dynamic formulation allows us to summarize the theoretical generic effects of rate suppression on input choice:

o When the allowed rate of return (or other regulatory policies) are set such that the utility is unable to realize its market rate of return, the reverse AJ effect may lead to a strategy of "capital minimization," i.e., the firm may reduce or lower its use of capital relative to other inputs.

o When other regulatory factors such as a,b,c,d, and/or e are set differently from 1, this may create distortions in input choices in the form of biases away from or towards capital, fuel, purchased power, and/or O+M inputs.

B. The Regulatory Penalities of Rate Suppression

The economic distortions that result from the general effects of rate suppression on a utility's input choices in turn give rise to three regulatory penalties which are imposed on ratepayers. These penalties are illustrated within the context of the specific types of non-economic investment and operating decisions that a utility may make in response to rate suppression and the external effects that rate suppression may have on the utility's cost of capital.

1. The Fuel Penalty

The fuel penalty is equal to the net present value of the dollar savings foregone by a utility which fails to invest in the most economical generation mix, i.e., that generation mix which would minimize revenue requirements for the electricity supplied. It arises from five major sources.

a. Coal conversion. Many utilities, particularly in the Northeastern part of the United States, have oil- or natural gas-fired generating capacity which could be economically converted to coal. For example, the New England Electric System--one of the few utilities to aggressively pursue coal conversion--has successfully converted Brayton Point, a 1,150 megawatt oil plant to coal at a cost of $192 million. The fuel savings to ratepayers (and the fuel penalty if this investment had not been undertaken) is $110 million per year while 11 million barrels of oil are saved per year.[10]

b. New powerplant construction for petroleum displacement. It is to be distinguished from construction to meet an increase in electricity demand, i.e., "load growth." Specifically, when the price of oil reached $30 per barrel in the 1970s, most baseload oil-fired powerplants became "economically obsolete."* That is, it became cheaper to construct, operate, and fuel a new non-petroleum baseload powerplant, e.g., coal, than it was to continue to operate and fuel an existing baseload oil plant.[11]

At today's relative fuel prices, and with the expectation that most natural gas prices will be decontrolled by 1985, the new economics of petroleum displacement continue to provide petroleum-dependent utilities with a somewhat paradoxical opportunity: they can reduce overall electricity costs to consumers by building new coal and nuclear powerplants to replace technically usable, but economically obsolete oil and natural gas plants.

For example, Northeast Utilities (NU), which is heavily dependent on petroleum for generating electricity, has built several large nuclear plants in large part to economically replace some of its existing baseload oil plants. As a result, the Millstone I and II nuclear units now save NU ratepayers roughly $321 million and the nation some 18 million barrels of oil per year.[12] Had these plants not been built, the fuel penalty on NU ratepayers would have equaled the amount now saved.

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* Baseload generating capacity is to be distinguished from intermediate (cycling) and peaking capacity. Peaking plants have low capital costs and quick startup times but, because of low thermal efficiencies (and more expensive fuel choice) have high running costs; they are used the equivalent of a few days each year to meet "peak demand," i.e., the hottest days of summer. Baseload plants can be run constantly at high operating rates. These capital intensive units produce power at high rates of thermal efficiency but require long startup times. Intermediate load plants are cycled to meet the swings of demand over a wide range of less pronounced daily peaks of electricity demand, e.g., the daily peak which typically occurs around dinnertime.

c. The non-retirement of old, inefficient, or non-economic powerplants, particularly petroleum plants, is a fourth source of the fuel penalty (as well as a factor in increasing air pollution). While the theoretical (and book depreciation) life of a powerplant is typically 30 years, in practice it is possible to extend the service life of most plants substantially beyond that time through increased expenditures on maintenance.

For old coal and other non-petroleum plants, a strategy of nonretirement can, in some cases, be economical if, for example, the costs of extending service life are substantially less than building a new plant (although this strategy can cause environmental problems).[13] However, it is typically not economical to extend the retirement life of an old oil or gas baseload plant; indeed, as argued above, the most economical course is to retire them before they reach the end of their service life. But the fuel penalty is incurred for every additional day these economically and technically obsolete plants are used.

d. Purchased power. Because of capital constraints due to financial difficulties and the disincentives of rate suppression for capital investment, many utilities have chosen to become more and more reliant on purchasing power from outside sources to meet new load growth. Such a reliance is in lieu of building additional capacity.

However, in many cases, long term purchased power (as opposed to short-term economical power transactions among utilities in regional power pools) tends to be more expensive than if a utility were to build its own generating facilities. The cost disadvantage of purchased power over new construction arises for several reasons.

One reason is that the price of purchased power is often contractually linked or linked by market forces to a utility's "avoided cost." Avoided cost is that cost which a utility does not incur at the margin by buying additional power rather than generating additional power. Obviously, if a utility could generate electricity with its own capacity cheaper than it could buy it, it would do so.

Thus, when a utility does purchase power (on a marginal cost basis), the price is often determined by a formula which charges the utility its avoided cost less a small discount. However, for petroleum-dependent utilities or for utilities which have substantial coal or nuclear capacity but burn petroleum at the margin,(i.e., to meet incremental demand) their avoided cost is usually deemed equivalent to the cost of petroleum-fired generation.* It follows that if a utility chooses to rely on purchased power over the long-term, it may pay slightly less than its avoided cost of running actual petroleum capacity but, because of this linkage to petroleum, it pays more, i.e., the fuel penalty, than it would if it were to build its own, more economical coal or nuclear plants. (It is worth repeating, this is so regardless of whether the power it purchases is generated by coal or nuclear fuel because of the nature of the purchased power contract.)

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* A case can be made that a utility's avoided cost should actually be the cost of a new powerplant which it elects not to build if that powerplant is cheaper than actual capacity at the margin. For example, a new coal plant supplies electricity cheaper than an old oil plant. If the utility contracts for purchased power instead of building that plant, its avoided costs may arguably be the cost of that unbuilt coal plant. This is a subtle but important distinction, especially in the case of cogenerated power which utilities, by law, must purchase at their avoided costs in whatever quantities cogenerators wish to supply it.

For example, over the last decade Public Service of Colorado (PSC) moved from a net seller of electricity to a point where, during its peak demand, it now relies on purchased power for over 20% of customer needs. The cost of this power ranges as high as 10 cents per kilowatt hour (kwh), which is almost twice the cost of power from new coal capacity which it had planned to build.[14] However, because of financial reasons (traceable to regulatory rate suppression), PSC deferred plans to build that capacity and now, via purchased power, its customers incur the fuel penalty.

A second and similar reason that purchased power often means a fuel penalty is that the single largest source of incremental purchased power is Canada. While Canada is expected to have sizeable amounts of surplus electricity to export to American utilities during the 1980s and early 1990s, Canada's National Energy Board (NEB) has declared that its electricity price must be linked to the price of oil -- even if that electricity is generated from its substantial low-cost hydro facilities.

For example, the Public Authority of the State of New York has contracted with Hydro Quebec to pay the oil-equivalent generating costs, less corrections for transmission costs and a small discount; the final price is about 80 percent of oil-generating costs so that New York pays over 5 cents per kilowatt hour for power which costs about one-half cent to generate.[15]

Thus, in both cases, the cost of purchased power tends to be linked to the price of petroleum-fired capacity which, at today's relative fuel prices, is the least economic fuel for baseload generation. As a result, there is a substantial implicit fuel penalty associated with purchased power.

2. The Cost of Capital Penalty

The second penalty imposed by rate suppressive regulation on electricity consumers is the cost of capital penalty; it is equal to the additional capital charges that a utility incurs because it is operating in a rate suppressive regulatory climate.

a. Increased financial risk. One source of the cost of capital penalty is the risk premium associated with rate suppression. According to a number of recent studies, investors appear to perceive an increase in risk with rate suppressive regulation.[16] This perception is reflected in the generally lower stock prices and bond ratings of utilities operating in the more unfavorable regulatory climates.

However, as stock prices fall, holding all other things constant, a utility's cost of equity capital rises. For example, both Trout (1979) and Dubin and Navarro (1982) have estimated that the difference between the cost of capital for a utility operating in a rate-suppressive versus a more favorable regulatory climate ranges from 100 to 200 basis points. Thus, when a utility issues new common stock to finance construction, it must pay a higher cost for that equity capital than it otherwise would.

Similarly, as a utility's bond rating falls, its cost of borrowing increases. For example, the interest differential on a AAA bond issue versus a BBB issue historically has ranged from 50 to 100 basis points and more recently, that spread has been as high as 200 basis points, e.g, 15.00 percent on a AAA bond versus 17.00 percent on a BBB bond. On a 500 million investment, that amounts to a cost of capital penalty equal to an increase in interest expenses of up to 10 million dollars annually.

b. Delays and cancellations. The second source of the cost of capital penalty is construction delays and cancellations associated with rate-suppressive regulation. Such delays and cancellations have been the frequent result of a utility's failure to obtain adequate rate relief from its PUC.

For example, in response to several unfavorable rate decisions by the Connecticut PUC, Northeast Utilities elected to slow construction on Millstone 3, a 1150 megawatt nuclear plant which, once on line, would have been able to economically displace about 7 million barrels per year of oil used by the NU system.[17] The reasons given for the delay by the company's Chief Executive Officer Lelan Sillin were twofold: inadequate cash flow and a refusal to sell additional stock below book value for fear it would "dilute" the value of existing shareholders' stock.

Besides the obvious fuel penalty associated with this delay, there is, however, a cost of capital penalty. Since the plant was well under construction, NU was forced to "carry" its existing interest expenses for a longer period of time. At the same time, because of the fixed charges associated with the construction of a powerplant and real escalation in capital costs over the period, the price tag, e.g., the total capital expenditure for the plant actually rose both in nominal and real dollars.

In a similar vein, a number of utilities have cancelled new powerplants in which there was already a large amount of capital already sunk. For example, because of an unacceptable high level of regulatory risk in 1981 Boston Edison cancelled Pilgrim 2, a 1150-megawatt nuclear powerplant in which it had already invested 278 million dollars.[18] In a subsequent rate hearing, the Massachusetts PUC ruled that Edison ratepayers would have to pay a substantial portion of that loss, which was amortized over a thirteen-year period and then added to rates.[19]

3. The Reliability Penalty

The third penalty imposed by rate suppressive regulation on electricity consumers is the reliability penalty; this penalty is reflected both in an increase in the probability of an electricity supply interruption and actual brownouts or blackouts.

The reliability penalty is the most difficult of the regulatory penalties to measure because many of its effects are not necessarily reflected in rates. Rather, in this dimension, rate suppression primarily affects the quality of service and costs are correspondingly more diffuse -- though nonetheless real.

For example, for industrial or commercial ratepayers, an increase in the probability of a supply interruption or, in severe cases, electricity rationing can alter both production and investment decisions. A firm may shift production to plants in other regions where supply is more secure. Alternatively, it may invest in its own back-up or primary electrical generation system. In either case, the likely result is higher costs to the firm than if it were guaranteed a more certain supply and a misallocation of resources to the nation. (Moreover, in the latter case, a reduction in the utility's load factor due to a loss of industrial customer shifts a portion of fixed costs to other rate payers, e.g., residential consumers.)

At the same time, in actual blackouts or brownouts, there is a real cost to the firm of sales (commercial sector) or production (industrial sector) foregone as well as the potential for spoilage in those firms dependent on electricity to maintain product quality (e.g., meat, drugs, baked goods, and the like).

Similarly, for residential ratepayers, there is also the spoilage problem; a blackout typically destroys most of a family's refrigerated goods. In addition, there is the discomfort associated with a loss of heating or cooling; because blackouts are most likely to occur at seasonal peaks (i.e., when it is coldest or hottest), this problem may be particularly acute.

a. Inadequate capacity is the most obvious source of the reliability penalty. This can occur when, because of rate suppression, a utility fails to build sufficient new powerplants to meet its load growth. This failure to build is in turn reflected in shrinking "reserve margins."

A utility's reserve margin measures the amount of generating capacity it has over and above that which is necessary to meet peak demand. When its reserve margin falls below some threshold (one rule of thumb is 20%) the probability of a loss of load increases considerably as does the incidence of "system outages," i.e., actual interruption of service to ratepayers.

When a utility's reserve margin goes negative, that is, when it does not have sufficient capacity to meet load, the utility either has to turn the lights out in portions of the system or find sufficient outside power to purchase. However, the ability to rely on purchased power is in turn constrained not only by the supply available but also by the individual utility's transmission capabilities and the grid system which the power travels over.

For example, suppose that a utility relies on purchased power to meet half of its peak load but buys that power from only one supplier who "wheels" the power over one main transmission line. Under such circumstances, the chance of losing that power unexpectedly could be quite high, e.g., the supplier's generators could fail or the transmission line might fail.

b. Reduced operations and maintenance expenses. The ability of a utility to "keep the lights on" also suffers in a more subtle way from rate suppression, however. Specifically, when a utility begins to run short of cash--when it has trouble financing its capital investment, issuing dividends to shareholders, making interest payments to bond holders, and paying its bills -- it is forced to begin cutting costs. While such cost cutting is often salutary in its initial stages (i.e., the company eliminates some of its fat), reliability becomes affected when the utility begins to skimp on the ordinary operations and maintenance (O&M) expenses: plants are inspected and preventive repairs are made less frequently, old components are used longer, and fewer personnel are available to service the plants. The result is an increase in "forced" or unscheduled outages as plants break down more frequently and take longer to repair. Thus, a second source of the reliability penalty is reduced operations and maintenance expenses.

In a study analyzing the effects of rate suppression, economist Marie Corio has brought this phenonenon into sharp focus; she found that the availability of generating capacity fell sharply as rate suppression increased. As Dr. Corio commented:

> "...if a utility's earnings are squeezed, poor [powerplant] unit performance follows--although it takes a couple of years for this to become apparent in lower [equipment] availability and ...higher costs to the ratepayer."[20]

c. Non-retirement of existing plant. The final source of the reliability problem is extended retirement of plant capacity. As discussed in the fuel penalty section, many utilities choose to prolong the service life of existing powerplants as a substitute for new capacity. However, these plants can not only cost more to run with age, but they may also break down more frequently.

C. Summary

In summary, the suppression of electric utility rates imposes fuel, cost of capital, and reliability penalites on consumers. These penalties derive from specific features of a utility's investment and operating strategy as well as from the effect of rate suppression on a utility's access to capital/financial markets. Table Two summarizes these regulatory penalties and their sources.

TABLE TWO: THE THREE PENALTIES IMPOSED BY RATE SUPPRESSION AND THEIR SOURCES

1. The Fuel Penalty
    - o Failure to pursue economic coal conversion
    - o Failure to build new powerplants for petroleum displacement
    - o Noneconomic reliance on purchased power
        - Contractual arrangements and avoided cost
        - Canadian contractual arrangements and the "oil link"
    - o Non-retirement of existing petroleum plants
    - o Use of combustion turbines for baseload generation

2. The Cost of Capital Penalty
    - o The financial markets' "risk premium" associated with rate suppressive regulation
    - o Construction delays and cancellations
        - higher real costs
        - higher carrying costs

3. The Reliability Penalty
    - o Failure to build new powerplants to meet load growth
        - increased loss of load probability as reserve margins shrink
        - inadequate capacity when reserve margins go negative
        - inadequate transmission lines and limitations of electric "grid"
    - o Reduced operations and maintenance expenses and an attendant increase in forced outages.
    - o Extended retirement of existing plant capacity

D. Critical Parameters Influencing the Regulatory Penalties

Our discussion of the three regulatory penalties imposed by rate suppression implies three critical parameters which are likely to have the largest impact on the size of those penalties: (1) a utility's generation mix; (2) a utility's anticipated load growth; and (3) relative fuel prices.

1. Capacity Mix

In general, the more reliant a utility is on baseload petroleum-fired powerplants, the more potential it has to economically displace its petroleum consumption. It may either build new non-petroleum plants (e.g., coal) to economically replace its existing petroleum plants or, where feasible, convert those existing petroleum plants to coal. Thus, the fuel penalty should increase with the percentage of baseload petroleum powerplants in a utility's capacity mix.

2. Load Growth

As a rule, the higher a utility's growth in electricity demand, the greater will be its need for additional sources of electricity supply. To the extent a utility does build new plant to meet load growth, the cost of capital penalty will rise with the utility's capital budget.

On the other hand, if a utility fails to invest in the required new plant, and instead chooses to rely on purchased power or combustion turbines, the fuel penalty will rise with load growth. If purchased power is unavailable and combustion turbines have not been built by the time they are needed, the reliability penalty will increase with load growth. Thus, the fuel, cost of capital, and/or the reliability penalty may all rise with load growth.

3. Relative fuel prices

The fuel penalty is, for the most part, a petroleum penalty since baseload petroleum generation is noneconomic compared to the two major competing supply options, coal and nuclear powerplants. Hence, the fuel penalty will increase as the relative price of oil and natural gas rises with respect to other fuels, principally coal and uranium.

Table Three summarizes our *a priori* expectations of the effects of capacity mix, load growth, and relative fuel prices on the magnitude of the three regulatory penalties imposed by rate suppression.

IV. MEASURING THE REGULATORY PENALTIES

A. Methodology: The Net Present Value of Forecasted Revenue Requirements

The discussion above suggests a methodology which we will adopt to measure the regulatory penalties imposed by rate suppression. Specifically, we will use a ratemaking model currently in wide use among the PUCs to forecast revenue requirements (and collaterally electricity rates) over time for six utilities from the different major regions of the country.*

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* The ratemaking model, is a "real world" version of our ratemaking equation [1] in Section II; it includes all elements of the ratemaking process, including such features as book and tax depreciation and normalized accounting. For details, the interested reader may consult *Regulatory Analysis Model: Descriptive Documentation*, prepared by M. S. Gerber & Associates, Inc., and Temple, Barker & Sloane, Inc., June 1980, Third Edition.

TABLE THREE: THREE CRITICAL PARAMETERS INFLUENCING THE MAGNITUDE OF RATE SUPPRESSION'S REGULATORY PENALTIES

Penalty	Capacity Mix	Load Growth	Relative fuel prices
FUEL:	Rises with the percentage of petroleum in the capacity mix	Rises with load growth if purchased power used to meet load	Rises as the price of petroleum increases with respect to other fuels, e.g., coal and uranium
COST OF CAPITAL:	Rises with the extent of new construction to displace petroleum (under rate suppression)	Rises with the extent of new construction to meet load (under rate suppression)	None
RELIABILITY:	Rises with the age of existing capacity coupled with the non-retirement of plant	Rises with load growth	None

Revenue requirements for each of these utilities will be forecast under two alternative regulatory climates, a "capital attraction" scenario in which each utility expects to earn its market return and a "rate suppressive" regime in which each utility expects to earn significantly less than its market return. The resultant revenue requirements for each scenario will be compared on a net present value to determine whether consumers are in fact better off when rates are held down in the short run.

Using this approach, it will be possible to directly measure the fuel and cost of capital penalties associated with rate suppression as well as gauge the effect on rates of one important PUC policy, the allowance of CWIP in the rate base. It will also be possible to derive several indirect measures of the reliability penalty.

B. The Electric Utility Sample: Six Representative Utilities

The six Class A, private, investor-owned regulated utilities selected to participate in the rate forecasting analysis were chosen on the basis of three major criteria: load growth, the percent of petroleum in the generation mix, and regional location. A major objective of the selection process was to identify a group of utilities which collectively are "representative" in the sense that they reflect different combinations of conditions typical of the larger national industry.

For example, utilities such as those in the Northeast are characterized by a relatively low forecast demand in load growth and depend heavily on oil while utilities such as those in the sunbelt Southwest and Southeast typically are anticipating higher forecasted load growth and are more heavily reliant on natural gas. Still another segment of the industry, e.g., many utilities in the Midwest, use relatively little petroleum and project very low load growth. Choosing a "representative utility" from each of the different regions of the country in one sense helps serve as a sensitivity analysis of the regulatory penalties to different industry conditions. At the same time, rate forecasts for these representative utilities provide an illustration of the effects of rate suppression which is truly national in scope.

The result of the selection process was a sample of six utilities representing New England, the Southeast, the Midwest, the Southwest, the Rocky Mountain-Dakotas region, and the Pacific Coast. Besides varying in load growth and generation mix. each utility has an interesting individual characteristic that provides additional insight into the effects of rate suppression. These characteristics range from a large coal conversion potential to a heavy reliance on purchased power.

Because of the political sensitivity of the rate suppression issue with respect to ratepayers and because no utility wished to strain relations with its PUC,* all of the participating utilities requested anonymity and required as a further condition of cooperation that any data they provided be treated as proprietary. Accordingly, each utility is designated generically (and discussed in the text) according to its principal characteristics. These characteristics are described in column three of Table Four, which also provides a summary of each utility's forecast load growth and generation mix.

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* The actual regulatory treatment of each of the utilities varied considerably. Some of the utilities had what they regarded as very good regulation (i.e., close to the capital attraction scenario discussed in the text) while others had what they regarded as a classic case of rate suppressive regulation. Thus, the participation of the utility was in no way a reflection of its actual regulatory treatment.

From Table Four, we see that the sample is a diverse one. The identifying characteristics of the participants include a large potential for economic coal conversion of existing oil plants for the Coal Conversion utility, significant opportunity for oil displacement by the Oil Displacement utility, and a similarly large potential for natural gas and oil displacement through new plant construction for the Gas Displacement utility* (which also has a significant reliance on purchased power).

Both the Coal/Nuclear and Purchase/Coal utilities are well-endowed with a low petroleum, primarily coal and nuclear capacity mix, while the latter is very reliant on purchased power. Finally, the Gas/Coal utility is positioned so that a failure to build new coal plants combined with its relatively high load growth will force it to revert back to a previously heavy dependence on natural gas.

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* The economics of petroleum displacement mean that, as a rule, it is cheaper to build, operate, and fuel a new coal or nuclear powerplant than it is to continue operating and fueling an old baseload petroleum plant. However, if the petroleum plant previously burned coal, it may be possible to reconvert back to coal without substantial boiler modification, and rather than building a new plant. That is why coal conversion of existing oil plants is economic for some utilities but new powerplant construction is a more economic way of oil and gas displacement for other utilities.

TABLE FOUR: LOAD GROWTH, CAPACITY MIX, AND IDENTIFYING CHARACTERISTICS

Representative Utility	Forecasted Load Growth*	Major Fuels in Capacity Mix**	Identifying Characteristics
Coal Conversion	1.5%	40% oil	Large coal conversion potential
Coal/Nuclear	2.0%	80% coal/nuclear	Heavily dependent on coal and nuclear power
Gas/Coal	4.0%	50% gas	Heavily dependent on natural gas
		50% coal	Use of coal to reduce petroleum dependence
Gas Displacement	3.0%	50% gas/oil 20% purchases	Large potential for economic gas displacement
Oil Displacement	1.5%	60% oil/gas	Large potential for economic oil displacement
Purchase/Coal	3.0%	70% coal/nuclear 20% purchases	Heavily reliant on purchased power

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* Growth in forecast energy demand, rounded to .5's place

** percentages rounded to ten's place.

Forecasted electricity demand ranges from a low of 1.5% for the Coal Conversion and Oil Displacement utilities to a high of 4.0% for the Gas/Coal. Similarly, petroleum dependence ranges from virtually zero for the Purchase/Coal utility to 60% for the Oil Displacement utility.

C. The Data Request and Forecast Assumptions

Each of the six representative utilities was asked to provide two different investment and operating strategies under two alternative regulatory scenarios. The first strategy was to correspond to regulatory treatment under a "capital attraction" scenario. The second strategy would be the utility's response to a "rate suppressive" regulatory regime.

Table Five summarizes the major features of the two regulatory scenarios as well as the supplementary set of base case assumptions the utilities were asked to adopt.

The "capital attraction" scenario was defined as a regulatory climate in which the utility would be allowed to (and would actually) earn its cost of capital (In the notation of Section III, $r_r = r_m$). The cost of equity capital was assumed to equal a real rate of return of 7 percent, or a nominal return ranging from 13 to 15.5 percent over the forecast period for the Data Resources Inc. inflation forecast adopted. This real return on equity was chosen as an approximation of the utility's actual cost of equity capital based on discussions with each of the utilities, financial analysts on Wall Street, evidence in recent rate cases, and independent academic estimates.[21] The cost of debt capital was based on bond prices from the DRI forecast and the company's own embedded cost of debt under the assumption that the utility would maintain a AAA bond rating under this favorable regulatory climate.

TABLE/5

TABLE FIVE: TWO ALTERNATIVE REGULATORY SCENARIOS AND SUPPLEMENTARY BASE CASE ASSUMPTIONS

	Capital Attraction Scenario	Rate Suppressive Scenario
Return on Common Equity	Equal to Estimated Market Cost of Capital	Equal to 300 basis points Below Market Cost of Capital
Interest costs	Standard and Poor's AAA	Standard & Poor's BBB

Base Case Assumptions Common to Both Scenarios

General Inflation Rate	Data Resources Inc. Winter 1981-82 cycle long forecast
Load Growth	Company supplied (see Table Four)
Real Fuel Price Escalation	2.0% oil and natural gas, 1% coal.
Bond Prices	Data Resources Inc. Winter 1981-82 cycle long forecast

The "rate suppressive" regime was defined as a regulatory climate in which the utility could expect to earn a real return on equity three hundred basis points below its cost. This return was chosen because it approximately corresponds to the real return the utility industry has realized in the post-embargo era.[22] The cost of debt capital was likewise based on the DRI forecast of bond prices and the company's own embedded cost of debt under the assumption that the utility would maintain a BBB bond rating in this rate suppressive regulatory climate.

Each company used its own forecasted load growth while fuel price projections were based on forecasts by the Department of Energy[23] and the Electric Power Research Institute.[24] These forecasts assumed a two percent real escalation in the price of oil and natural gas (after the latter was deregulated in 1985) and a one percent real escalation in the price of coal (while nuclear fuel prices were set according to company estimates based on their long term contracts).

D. The Investment and Operating Strategies

In response to the data request, each utility detailed two alternative construction budgets under the two alternative regulatory scenarios for its assumed load growth for a specified time period. Although our data request specified thirty years, that time period varied depending on the utility's planning horizon and modeling capabilities. For example, the Gas/Coal utility provided data until the year 2009 while the Gas Displacement and Purchase/Coal utilities provided data to the year 2001. The Coal Conversion utility provided data to the year 2000 while data for the Oil Displacement utility to 1996 was trended to provide a forecast to the year

2000. The Midwest utility provided data to 2005. (In the tables that follow, these forecast periods are always indicated.)

Each utility also provided its fuel, purchased power, operating and maintenance, and other expenses associated with meeting its load growth given existing capacity and its planned capacity expansion. (Other information such as the depreciation rates for existing plants, the company's dividend policy, and its use of investment tax credits necessary to perform the analysis also were supplied.) A discussion of each of the representative utility's alternative investment and operating strategies sheds light on the dynamics of rate suppression.

1. The Coal Conversion utility invested a total of $9.9 billion over the forecast period. During the 1980s, it converted over 800 megawatts of existing oil capacity to coal under the capital attraction scenario, and it finished on schedule the construction of a large nuclear plant. During the 1990s, the utility also built four additional 600 megawatt coal plants (with 2/3rd's ownership) to meet projected load growth and aging plants were retired on schedule. Reliance on purchased power was limited to small transactions with other members of the powerpool and comprised a negligible portion of its peak demand.

In contrast, under the rate suppressive scenario, the Coal Conversion spent only $4 billion. It converted less than 200 megawatts of oil capacity to coal, and it sold down its share in the nuclear plant under construction to roughly 1/3rd to finance the plant's completion (rather than borrowing or issuing stock). To meet load during the 1980s, it began to reduce its sales of electricity to outside customers and by the end of the 1990s, it was a net purchaser, buying power equivalent to roughly 175 megawatts of capacity, or 3.0 percent of its peak load. At the same time, it retired none of its existing capacity.

2. Under the capital attraction scenario, the Coal/Nuclear utility completed several large nuclear plants it currently had under construction with no delay during the 1980s. During the 1990s, four additional coal units (totaling over 2000 megawatts) were built while the firm also assumed a 75% share of two additional 1100 megawatt nuclear units, coming on line at the turn of the century. Finally, an intermediate load ("cycling") coal plant was built in the early 1990s while all plants were retired on schedule.

In contrast, under the rate suppressive scenario, two thirds of the new nuclear capacity was delayed four years so that the completion date of the last unit was pushed from 1986 to 1990. No further construction was undertaken, nor was any existing plant retired (except one small plant retired in both scenarios). To meet load, the utility more than doubled its purchased power and increased the use of its existing oil and natural gas capacity; over twice as much oil and three times as much gas were consumed than in the capital attraction scenario.

3. The Gas/Coal utility steadily adds over 5000 megawatts of new coal capacity in 600 megawatt increments between 1982 and 1997 and adds a similar amount between 1998 and 2009 in the capital attraction scenario. Each of the plants is built before it is needed for load growth and used to displace natural gas consumption. In this process, the utility maintains a comfortable reserve margin in excess of 20% over the period.

In contrast, under rate suppression, the utility builds 2000 megawatts less coal capacity in the time frame 1982 to 1997; it is built solely to meet load. At the same time, the existing gas and oil capacity is extended well beyond its planned service life. By 1998, the utility is forced to undertake the construction of 6000 megawatts of new coal capacity through the year 2009 to replace aging plant. However, in the period between 1982 and 2000, its reserve margins drops from above 20% to 13 percent by 1990 and a perilous 9.6% by the year 2000.

4. In the capital attraction scenario, the Gas Displacement utility builds over 2500 megawatts of coal capacity. These plants are constructed primarily for the economic displacement of natural gas, with plant in-service dates ranging from 1988 to 1992. In addition, the utility adds three large coal plants in the late 1990s to meet load. Oil and natural gas capacity is retired on schedule. In contrast, none of these plants are built in the rate suppressive case, no plants are retired, and incremental demand is met through purchased power. Only several large nuclear plants near completion are finished.

5. Under the capital attraction scenario, the Oil Displacement utility adopts a three-pronged investment strategy to reduce its oil use. In the mid-1980s it purchases a share of a large coal plant now under construction. At the same time, it participates as a joint owner in a major coal project, with capacity coming on line in the early 1990s. Finally, it builds additional transmission lines to purchase power at favorable contract prices to help meet load in the 1990s. All three of these projects are designed to reduce oil consumption through coal displacement and economy purchases.

In contrast, under the rate suppressive scenario, none of the three projects are undertaken. Instead, the retirement of over 2000 megawatts of natural gas and oil capacity is deferred.

6. In the capital attraction scenario, the Purchase/Coal utility puts four new coal units of roughly 500 megawatts each into service between 1988 and 1997. These plants are built primarily to prevent the utility's

increased reliance on more expensive purchased power. As a result, that reliance on purchased power shrinks to 7% of total capacity supplied by the year 2000.

Under rate suppression, none of the coal units are built and instead the utility increases its reliance on purchased power to 36% of total capacity. To wheel in that power, over $1 billion is spent on additional transmission lines.

Table Six summarizes the capital expenditures and expenses for fuel and purchased power expenses for each of the six utilities under the capital attraction versus rate suppressive scenarios and their corresponding investment and operating strategies.

From Table Six, it is clear that there is a dramatic difference between each of the utility's choice of inputs for the two alternative scenarios. Under the capital attraction scenario, when the utility expects to earn its cost of capital, each has chosen a considerably larger capital budget and a correspondingly smaller level of fuel and purchased power expenses than under the rate suppressive regime. (Put more technically, each utility chooses a larger capital-other input ratio in the scenario in which it expects to earn a higher rate of return on its capital investment.)

For example, the Coal Conversion utility chooses a $9.9 billion capital budget and spends $29.9 billion on fuel and purchased power in the capital attraction scenario while it invests only $4.0 billion but spends over $43.2 billion on fuel and purchased power under rate suppression. Similarly, the Oil Displacement utility chooses a $22.1 billion capital budget and spends $77.2 on fuel and purchased power in the capital attrac-

TABLE/6

TABLE SIX: CAPITAL EXPENDITURES AND EXPENSES FOR FUEL AND PURCHASED POWER UNDER ALTERNATIVE REGULATORY SCENARIOS

	CAPITAL ATTRACTION SCENARIO		RATE SUPPRESSIVE SCENARIO	
Representative Utility	Capital Expenditures (millions)	Fuel and Purchased Power Expenses (millions)	Capital Expenditures (millions)	Fuel and Purchased Power Expenses (millions)
Coal Conversion (1982-2000)	9,943	29,947	4,077	43,195
Coal/Nuclear (1982-2005)	40,581	110,360	23,927	139,437
Gas/Coal (1982-2009)	62,847	152,113	64,815	201,022
Gas Displacement (1982-2001)	30,497	107,801	8,918	133,591
Oil Displacement (1982-2000)	22,141	77,221	12,922	95,253
Purchase/Coal (1982-2001)	7,606	35,560	4,766	45,386

tion scenario but invests only $12.9 billion and spends $95.3 billion on fuel and purchased power. Only the Gas/Coal utility invests more under rate suppression. Recall, however, that the Gas/Coal utility actually builds 2000 megawatts more capacity in the capital attraction scenario so that the higher capital budget under rate suppression in large part reflects the higher (nominal) capital costs of the 6000 megawatts it waits until the year 1996 to build. And because it foregoes economic gas displacement under rate suppression before 1996, its fuel and purchased power expenses are higher under rate suppression than under capital attraction ($201.0 vs. $152.1 billion).

For followers of the Averch-Johnson literature, the above table provides interesting supportive evidence for the reverse AJ effect (described above) which predicted that as a regulated firm's expected return on capital declines so too will capital's use in the production process. (That is, the capital-other input ratio should fail with the expected rate of return for a given output level, in this case forecasted demand.) The remaining question posed by the AJ literature (as well as the discussion in Section III above) is which mix of capital and other inputs is more optimal in the sense of minimizing costs to ratepayers. It is that question which our forecasting analysis is designed to answer.

E. The Forecasting Analysis: Revenue Requirements Under Alternative Regulatory Treatment

From the data provided by the companies and supplementary data from a variety of sources,[25] annual revenue requirements for each of the six utilities under the two different regulatory scenarios were forecast using the "Regulatory Analysis Model" (RAM) which is in wide use among PUCs and utilities today.

Before reporting the results of the forecasting analysis, it is useful to comment on the pattern of revenue requirements over time that we are likely to observe for each of the utilities. Through an understanding of this pattern, it becomes clear why the relevant method of comparing the results of the two regulatory scenarios is net present value discounting.

1. The typical time profile of revenue requirements we expect to observe in the forecasting analysis is presented in Figure One, which depicts revenue requirements on the vertical axis and time on the horizontal axis.

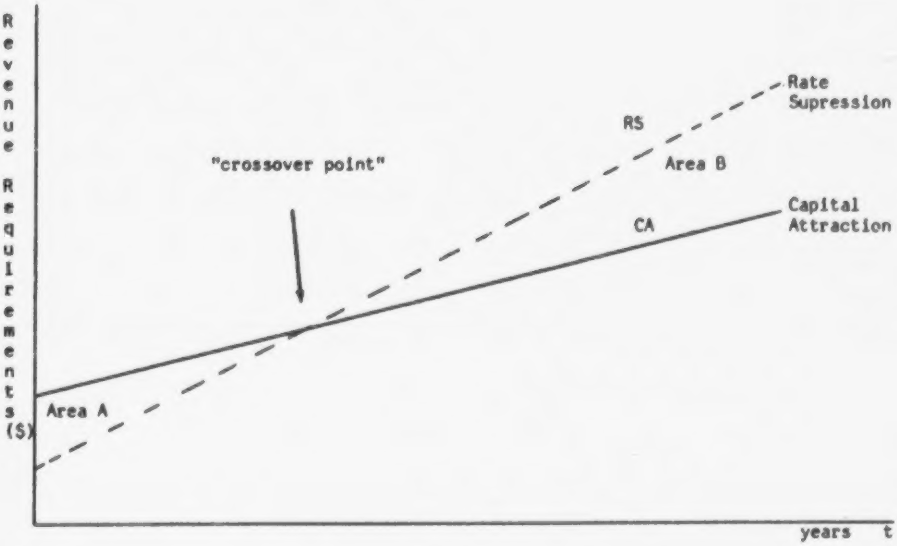
In the figure, revenue requirements under the "rate suppressive" scenario (dotted line RS) should be lower in the early years of the forecast than revenue requirements under the "capital attraction" scenario (solid line CA). From the discussion in Section III, we should expect this initial profile for several reasons.

First, by assumption, the utility earns a significantly lower ROE under rate suppression so that, starting at the same initial situation with all other factors the same, revenue requirements should be lower under rate suppression (according to the ratemaking formula in [1]).

More subtly, because of the mechanics of the ratemaking formula, rates tend to rise in the short run with a firm's capital budget. This phenomenon, known as "front-end loading," is independent of the issue of rate suppression; it is due primarily to the method in which depreciation expenses for new construction enter the ratemaking formula, i.e., in a straightline fashion. Accordingly, for any given construction project, the revenue component is highest in the initial years of the plant's operation

Figure One

FIGURE ONE: THE TYPICAL TIME PROFILE OF REVENUE REQUIREMENTS UNDER ALTERNATIVE REGULATORY SCENARIOS



when the net plant is largest, other things held constant, while over time, the revenue component for the project declines linearly. Thus, in some cases, this front-end loading raises rates in the earlier years because of the more capital-intensive construction budgets under the capital attraction scenario so that even if the utility earned the same ROE in the two regulatory scenarios, it is possible that rates would be higher in the early years of the capital-intensive, i.e., capital attraction, program.

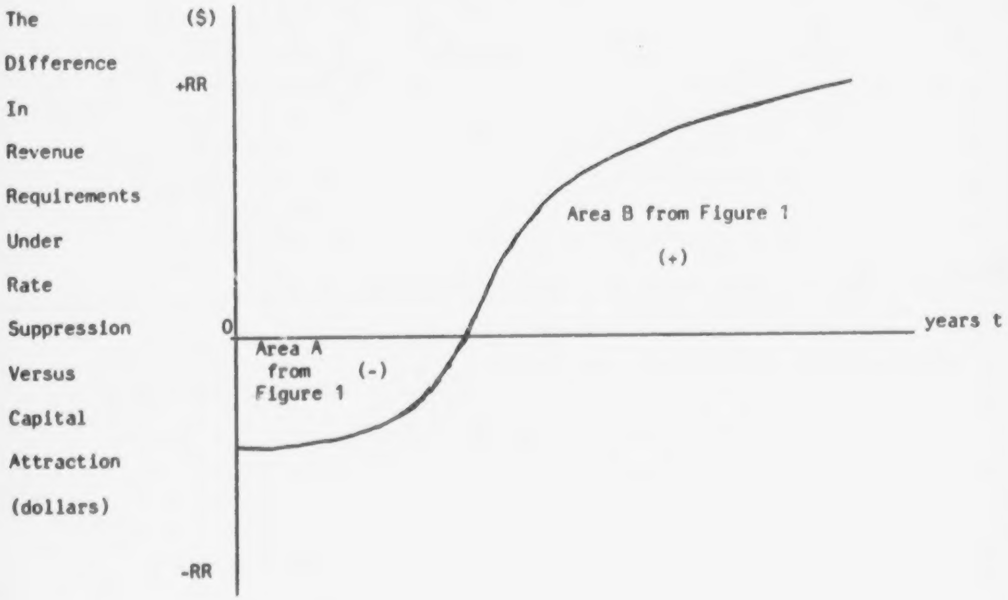
However, under the rate suppressive scenario, revenue requirements should rise at a faster pace as the effects of the regulatory penalties accumulate. That is, the negative effect of the utility's less economic investment and operating strategy on its fuel, purchased power, and O+M expenses combined with the effect of the cost of capital penalty on its interest expenses begins to offset the benefits to consumers of holding the utility's allowed rate of return below the market rate. At the same time, the effects of "front-end loading" tend to diminish. Thus, at some juncture in time, depending on the individual utility, there will be a crossover point T in the figure where rates in the rate suppressive scenario rise above rates in the capital attraction scenario.

It is this typical time profile of rates which suggests why net present value discounting is the appropriate tool to determine whether ratepayers are better or worse off under rate suppression: since consumers pay lower rates in the early years of rate suppression but higher rates in the later years, the only way to compare the two streams is to calculate their present value and determine which is larger.

Figure Two measures the costs and benefits of rate suppression by plotting the difference in revenue requirements between the two scenarios. It is derived from Figure One where the area A indicates the amount revenue

Figure Two

FIGURE TWO: THE COSTS AND BENEFITS OF RATE SUPPRESSION



requirements are less under rate suppression and area B indicates the amount revenue requirements are more under rate suppression. The total areas under the lines RS and CS can be compared using standard discounting procedures in order to determine the net effect on ratepayers.

For example, if the net present value of revenue requirements of the Coal Conversion utility under rate suppression is higher than the net present value of revenue requirements under the capital attraction scenario, then for the assumed discount rate, consumers are clearly worse off under rate suppression. Using this approach, it is thus possible to determine under what range of discount rates consumers might actually be better off if revenue requirements (and therefore electricity rates) were not suppressed in the short run.

At the same time, we can calculate an internal rate of return (IRR) which equates the net present value of the two revenue streams. This IRR is equivalent to what the consumer's discount rate would have to be in order for him to be indifferent between lower rates now (under rate suppression) and lower rates later (under capital attraction). If the IRR is very high--beyond the plausible range of the ratepayers discount rate--then it provides additional evidence that consumers are indeed better off under capital attraction (and conversely for rate suppression).

The IRR is also a measure of the return on the consumer's "investment" in higher short run rates. That is, when the consumer pays higher rates in the short run, he is in one sense providing the utility not only with the incentive but also the financial resources, e.g., cash flow to undertake a more economical investment and operating strategy. The return on the ratepayer's "investment" comes in the form of rates which are lower than they otherwise would be in the absence of that capital investment.

As a final comment on the figures, they vividly illustrate the short versus long run tradeoff between rate suppressive versus more fair and reasonable regulation. In doing so, it exposes the "time horizon" problem that is really the crux of the current regulatory dilemma. For if one's time horizon is short and one truncates the analysis at or shortly after the crossover point T--as the political pressures described in Section II may force a PUC commissioner to do--rate suppression can be justified on the grounds that it provides the best result for consumers. (A similar conclusion is arrived at if the PUC commissioner's discount rate is very high because of those same political pressures.) However, if one takes a long run view--as is suggested by the long lead times symptomatic of building electrical powerplants and the requirements of rational energy policy--"rate suppressive" regulation (as our results below suggest) may, contrary to one's intuition, not be in the best interests of consumers.

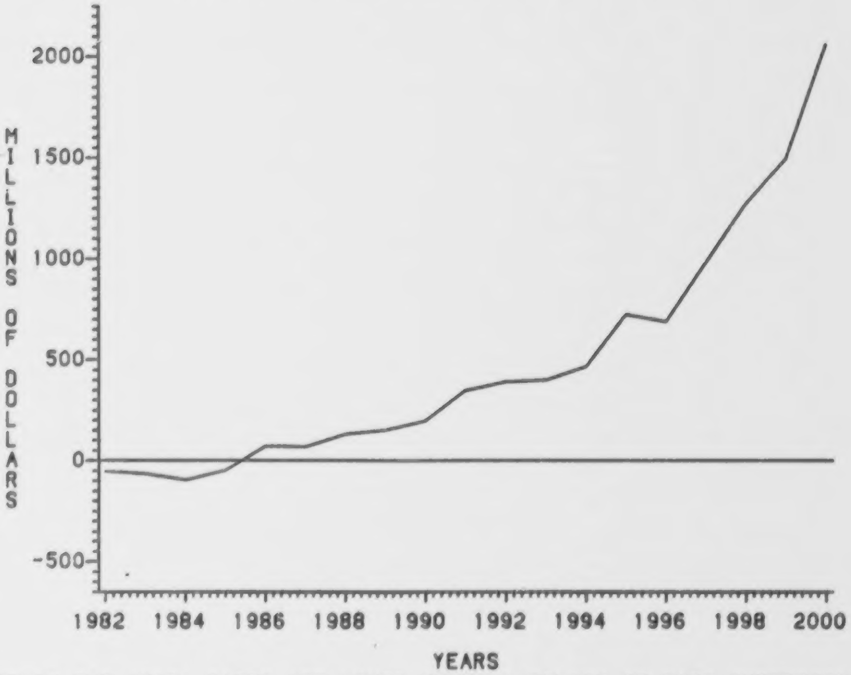
2. The forecasted revenue requirement streams for each of the six utilities were calculated using the RAM model. The differences in the two revenue streams are presented in the set of line graphs in Figures Three-A through Three-F where the difference in revenue requirements is measured on the horizontal axis and time is measured on the horizontal axis. Following the approach of Figure Two, in each graph, the lines below the horizontal line at zero indicate that revenue requirements are less under rate suppression while the lines above the horizontal line indicate that revenue requirements are more under rate suppression.

Note that for each of the six utilities in Figure Three, revenue requirements follow the expected time profile; they are lower in the early years of rate suppression but correspondingly higher in the later years.

DIFFERENCE IN REVENUE REQUIREMENTS

RATE SUPPRESSION VERSUS CAPITAL ATTRACTION

COAL CONVERSION UTILITY



BELOW THE AXIS: RATES ARE LOWER UNDER A POLICY OF RATE SUPPRESSION

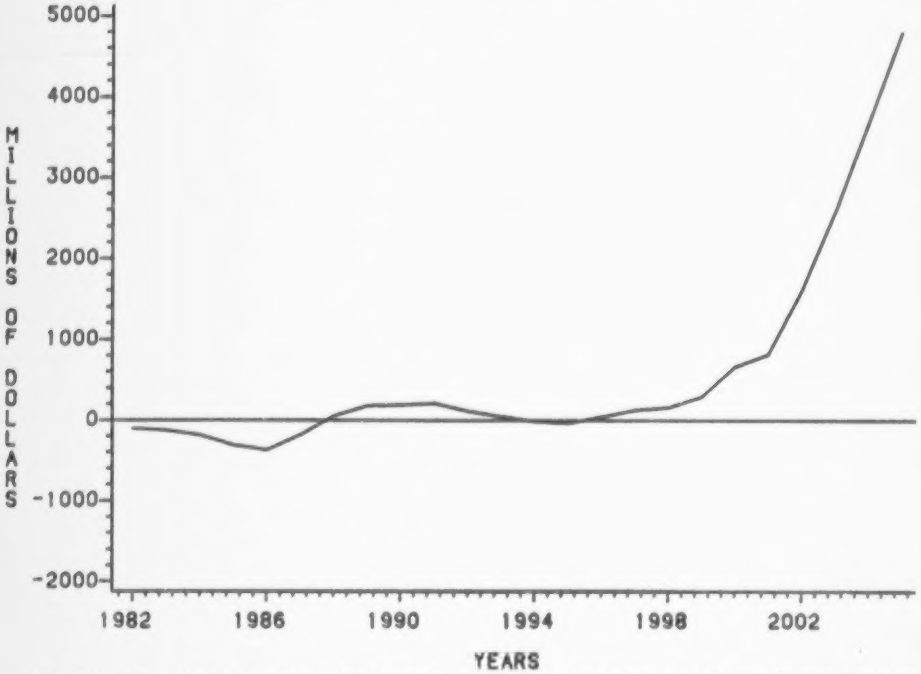
ABOVE THE AXIS: CAPITAL ATTRACTION RATES ARE LOWER.

FIGURE THREE-A

DIFFERENCE IN REVENUE REQUIREMENTS

RATE SUPPRESSION VERSUS CAPITAL ATTRACTION

COAL NUCLEAR UTILITY



BELOW THE AXIS: RATES ARE LOWER UNDER A POLICY OF RATE SUPPRESSION

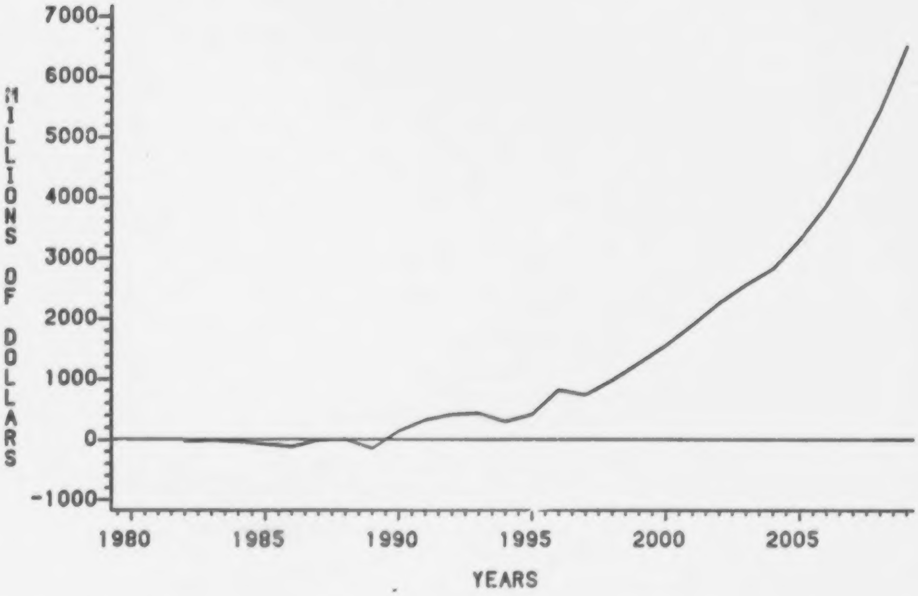
ABOVE THE AXIS: CAPITAL ATTRACTION RATES ARE LOWER.

FIGURE THREE-B

DIFFERENCE IN REVENUE REQUIREMENTS

RATE SUPPRESSION VERSUS CAPITAL ATTRACTION

GAS/COAL UTILITY



BELOW THE AXIS: RATES ARE LOWER UNDER A POLICY OF RATE SUPPRESSION

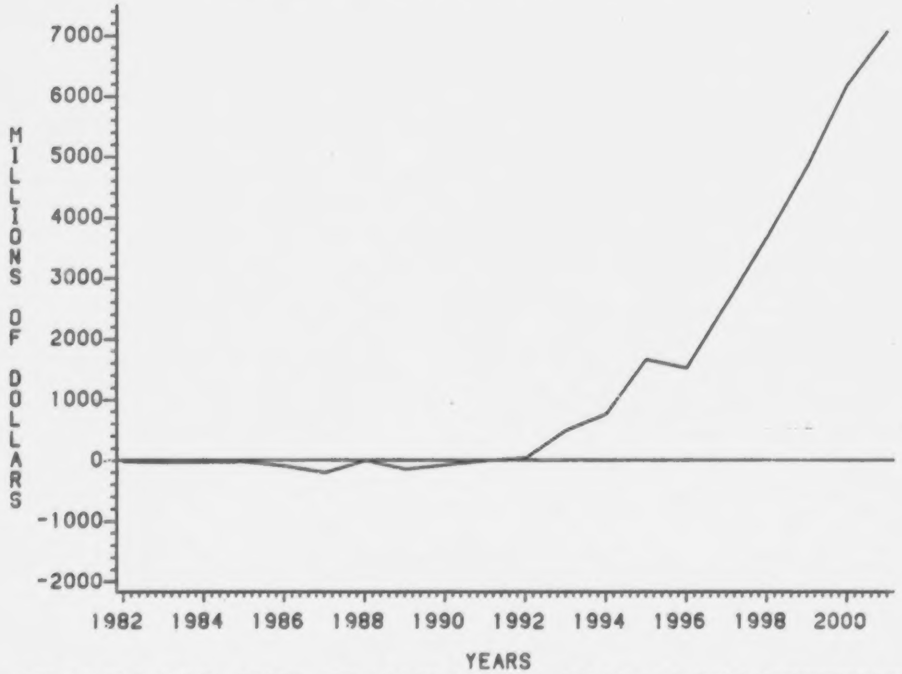
ABOVE THE AXIS: CAPITAL ATTRACTION RATES ARE LOWER.

FIGURE THREE-C

DIFFERENCE IN REVENUE REQUIREMENTS

RATE SUPPRESSION VERSUS CAPITAL ATTRACTION

GAS DISPLACEMENT UTILITY



BELOW THE AXIS: RATES ARE LOWER UNDER A POLICY OF RATE SUPPRESSION

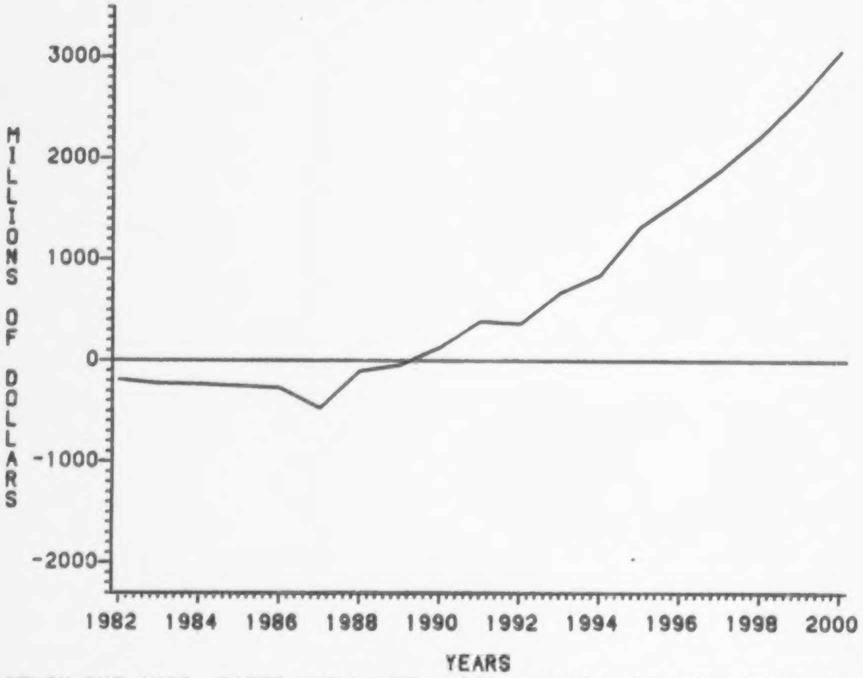
ABOVE THE AXIS: CAPITAL ATTRACTION RATES ARE LOWER.

FIGURE THREE-D

DIFFERENCE IN REVENUE REQUIREMENTS

RATE SUPPRESSION VERSUS CAPITAL ATTRACTION

OIL DISPLACEMENT UTILITY



BELOW THE AXIS: RATES ARE LOWER UNDER A POLICY OF RATE SUPPRESSION

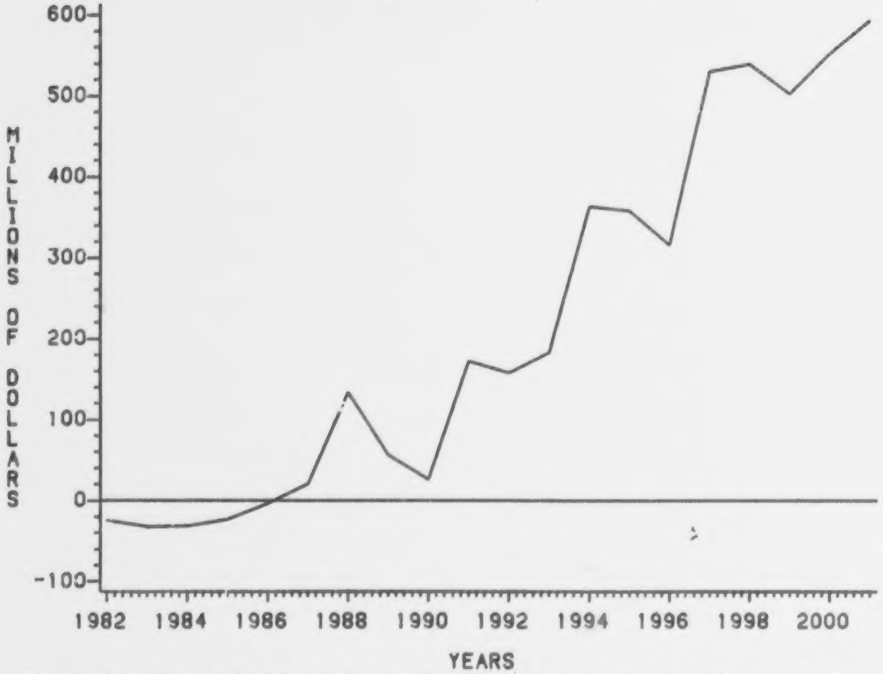
ABOVE THE AXIS: CAPITAL ATTRACTION RATES ARE LOWER.

FIGURE THREE-E

DIFFERENCE IN REVENUE REQUIREMENTS

RATE SUPPRESSION VERSUS CAPITAL ATTRACTION

PURCHASE COAL UTILITY



BELOW THE AXIS: RATES ARE LOWER UNDER A POLICY OF RATE SUPPRESSION

ABOVE THE AXIS: CAPITAL ATTRACTION RATES ARE LOWER.

However, there is some divergence among utilities as to when the "crossover point" is reached.

For example, the Coal Conversion utility, which can quickly convert its oil capacity to coal and realize fuel savings, reaches the crossover point as early as 1986: while revenue requirements under rate suppressive regulation are $54 million less than under capital attraction regulation in the first year of the forecast and $47 million less in 1985, by 1986, revenue requirements are $71 million more and jump to $132 million more by 1988. This gap continues to widen, reaching $2.1 billion by the end of the forecast period.

Similarly, for the Purchase/Coal utility, revenue requirements under rate suppression are $25 million less than under capital attraction in the first year of the forecast but the crossover point is reached by 1987. By 1991, revenue requirements are $172 million more under rate suppression and by the end of the forecast period the gap widens to $594 million dollars.

In contrast, the Oil Displacement utility doesn't reach its crossover point until 1990, when revenue requirements under rate suppression are $137 million more. Primarily because of the enormous fuel savings from its coal projects, the revenue gap continues to widen so that by the year 2000, the advantage of capital attraction over rate suppression has grown to $3.1 billion. Similarly, the Gas/Coal utility doesn't reach its final crossover until 1990* primarily because the coal plants that it is building to displace natural gas consumption take that long to come on line. But while rate suppression enjoys an advantage of as high as $149 million in 1988, by 1991, ratepayers are paying $330 million more under rate suppression and $1.6 billion more by the end of the century.*

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*The Gas/Coal utility's revenue requirements are a scant $4 million less under capital attraction in 1988 by reverting back to being greater in 1989. After 1980, however, they are consistently higher under rate suppression.

Given these time profiles of rates, it is necessary to apply our discounting procedures to these competing revenue requirement streams to determine the net impact on the welfare of consumers.

3. The net present value of the costs of rate suppression for each of the six utilities are summarized in Table Seven as a means of measuring the net impact of rate suppression on consumers.

Column two presents the costs of rate suppression for the "private discount rate," which was assumed to be equal to a real return of 6%. Column three presents the costs of rate suppression for the "social discount rate," which was assumed to be equal to a real return of 3%.**

These costs were arrived at by calculating the net present value of the difference in revenue requirements between the two scenarios, as represented in Figures 3A through 3F. A positive number indicates a net cost to ratepayers from rate suppression while a negative number (indicated by parentheses) indicates a net benefit. In addition, the internal rate of return equating the difference in the two streams to zero appears in column four.

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*Only the Coal/Nuclear utility has a distinct multiple crossover point. The brief reversion to higher costs under rate suppression near the turn of the century is a classic example of the problem of "front loading" of rates discussed above; the reversion is largely due to the coming on line (and into rate base) of a number of large coal and nuclear plants. However, the savings from those plants in fuel costs quickly offsets the front end load.

**The nominal discount rates used varied according to the formula $(1+i)(1+r)$ where i equals the DRI forecasted rate of inflation in the given year and r equals 3% for the social rate and 6% for the private rate, respectively.

TABLE SEVEN: NET PRESENT VALUE OF THE COSTS OF THE RATE SUPPRESIVE SCENARIO AND THE INTERNAL RATE OF RETURN

Representative Utility	Net Present Value of Ratepayer Costs at the Private Discount Rate* (millions)	Net Present Value of Ratepayer Costs at the Social Discount Rate** (millions)	Internal Rate of Return
Coal Conversion (1982-2000)	1,289	1,960	.40
Coal/Nuclear (1982-2005)	242	966	.16
Gas/Coal (1982-2009)	2,302	4,191	.36
Gas Displacement (1982-2001)	2,840	4,686	.38
Oil Displacement (1982-2000)	1,530	2,674	.20
Purchase/Coal (1982-2001)	607	925	.40

* Assumed equal to a 6% real return

** Assumed equal to a 3% real return

While the magnitudes vary considerably, the direction of the results is clear: rate suppression entails a net cost to ratepayers for each of the six utilities under both assumed discount rates.

For example, in column two, for the private discount rate, the net costs of rate suppression for the Gas/Coal utility is $2.3 billion. This result is in accordance with our expectations since this utility not only has a large potential for economic petroleum displacement but is also projecting a relatively higher load growth.

In the more moderate range, the net cost of rate suppression to the ratepayers of the Coal Conversion utility is $1.3 billion dollars. Thus, despite a very low forecasted demand growth, this utility's potential for coal conversion likewise means ratepayers are considerably worse off under rate suppression. The net cost of rate suppression to ratepayers of the Oil Displacement utility is similarly high, at $1.5 billion, a result likewise attributable primarily to petroleum displacement. At the lower end of the range (although still substantial), are the Coal/Nuclear and Purchase/Coal utilities, with costs of $242 million and $607 million, respectively.

As one would expect, for the lower social discount rate, the costs in column three are significantly larger for all utilities. For example net costs swell to $4.2 billion and $2.7 billion for the Gas/Coal and Oil Displacement utilities, respectively, while they register $2.0 billion and $925 million for the Coal Conversion and Purchase/Coal utilties, respectively.

In column three of Table Seven, the internal rate of return (IRR) provides a measure of the nominal discount rates which would make ratepayers of each utility indifferent between the two regulatory scenarios and the resultant revenue requirement streams.

Interpreting the column, ratepayers for the Coal Conversion and Purchase/Coal utilities would realize a 40% return if they paid their utility slightly higher rates in the early years of the forecast period. This "investment" in higher rates would, by allowing the utility to earn its market cost of capital, encourage it to pursue a more economic capital investment program; the resultant savings represent the ratepayer's return (as well as the utility's) on that investment. Similarly, ratepayers for the Gas/Coal utility would earn a return of 36% while those of the Oil Displacement utility would earn a 20% return.

The 6% (real) private discount rate is generally supported in the academic literature; however, many analysts suggest consumers frequently exhibit behavior in making energy purchase decisions which imply higher real discount rates. Although these higher implied rates probably result from a lack of information or a distrust of promised future savings rather than direct indication of consumer time value of money, the use of internal rate of return statistics circumvents this debate on the appropriate discount rates for consumers. Except for the Coal/Nuclear utility,* these IRRs are well beyond most estimates of plausible individual discount rates,** suggesting quite strongly that average ratepayer welfare would be improved if rates were raised initially in the Capital Attraction scenario to stimulate economic capital investment by the utilities.

F. Supplementary Results: The Fuel, Cost of Capital, and Reliability Penalties

From the forecast results, it is possible to partly decompose the total costs of rate suppression into their major component parts, namely, the fuel and cost of capital penalties.

1. The fuel penalty is presented in Table Eight. The first column of numbers displays the total increase in fuel and purchased power expenses

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*However, when CWIP is allowed in the rate base, even the IRR for the Coal/Nuclear utility rises about 20%. (See Table 11 and discussion below).

**Except perhaps for the very poor, sick, or elderly.

TABLE EIGHT: THE FUEL AND PURCHASED POWER PENALTY AND INCREMENTAL PETROLEUM CONSUMPTION UNDER THE RATE SUPPRESSIVE SCENARIO

Representive Utility	Incremental Fuel and Purchased Power Expenses Under Rate Suppression (total in millions)	NPV at Private Discount Rate (millions)	NPV at Social Discount Rate (millions)	Incremental Oil and Natural Gas Consumption (millions of barrels) Total
Coal Conversion (1982-2000)	13,247	2,436	3,401	149
Coal/Nuclear (1982-2005)	29,051	3,425	5,006	96
Gas/Coal (1982-2009)	48,909	4,076	6,551	290
Gas Displacement (1982-2001)	25,812	3,420	5,184	357
Oil Displacement (1982-2000)	18,032	4,925	5,710	118
Purchase/Coal (1982-2001)	9,827	1,496	2,199	*
TOTALS				1,010

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* Does not use petroleum

for the rate suppressive scenario over that in the capital attraction scenario while the the second and third columns list the net present value of that difference for the private and social discount rates, respectively. As a further indirect measure of the effect of rate suppression on the national energy policy goal of reducing oil import dependence, the fourth column presents the incremental consumption of petroleum in the rate suppressive scenario.

As predicted from the discussion above (and as previously indicated in Table Six) a strategy of capital minimization under rate suppression leads to a higher absolute level of fuel and purchased power expenses for all six utilities.

In accordance with our expectations (expressed in Section II), this fuel penalty does seem to bear some relationship with the percentage of petroleum in each utility's generation mix and with load growth. For example, high fuel penalties are incurred by the Gas/Coal and Gas Displacement utilities, both of which use petroleum for 50% of their generating needs and both of which have relatively higher annual load growth rates (i.e., 4.0% and 3.0%, respectively).

In column three, the net present value of the incremental costs of fuel and purchased power expenses at the private discount rate ranges from a low of $1.5 billion for the Purchase/Coal utility to a high of $4.9 billion for the Oil Displacement utility. Comparing this column to the first column of numbers in Table Seven, we see that the fuel penalty typically exceeds the total costs to ratepayers of rate suppression.

For example, the net present value of the Coal Conversion utility's fuel penalty of $2.4 billion (Table 8, col.3) is almost double the $1.3

TABLE NINE: THE COST OF CAPITAL PENALTY UNDER THE CAPITAL ATTRACTION SCENARIO: DEBT FINANCING COMPONENT

Representative Utility	Cost of Capital Penalty At BBB versus AAA Bond Ratings (millions of dollars) Total	NPV at Private Discount Rate (millions)	NPV at Social Discount Rate (millions)
Coal Conversion (1982-2000)	726	174	225
Coal/Nuclear (1982-2005)	1,443	246	336
Gas/Coal (1982-2009)	2,636	307	451
Gas Displacement (1982-2001)	2,793	757	949
Oil Displacement (1982-2000)	1,217	395	491
Purchase/Coal (1982-2001)	522	129	168

billion in total costs to ratepayers of rate suppression (Table Seven, col.2) while similarly the Gas/Coal utility's fuel penalty is $4.1 billion as compared to a total cost to ratepayers of $2.3 billion.

The reason that the fuel penalty exceeds the total costs of rate suppression is that in the rate suppressive scenario, the utility earns a lower return on equity. This partially compensates for the fuel penalty rate suppression imposes, but it is obvious that rate suppression is a "bad bargain": in exchange for a savings on paying the utility its market rate of return, consumers still pay billions more than they would otherwise have to, in large part because of the utility's higher fuel and purchased power costs.

Finally, all five of the petroleum-dependent utilities consume larger, indeed much larger, quantities of oil and/or natural gas under rate suppression. For example, the Gas/Coal utility consumes an additional 290 million barrels of oil over the forecast period while the Coal Conversion utility consumes an additional 149 million barrels, and the Gas Displacement utility consumes an additional 357 million barrels. Together, then, these five utilities increase U.S. petroleum consumption by over one billion barrels over the forecast period.

2. The cost capital penalty imposed by rate suppression is presented in Table Nine. Column two displays the total difference in revenue requirements for the capital attraction scenario construction budget when that budget is financed by BBB-rated bonds rather than by AAA-rated bonds; columns three and four report the net present value of that penalty at the private and social disount rates, respectively.

The variations in the cost of capital penalty are directly related to the variations in each utility's capital budget. That budget variation in turn depends on the utility's size and load growth as well as the length of the forecast period. Thus, the Gas/Coal utility, which has the highest load growth, one of the largest construction programs, and the longest forecast period pays a cost of capital penalty of $2.6 billion over the forecast period or $307 billion in net present value terms at the private discount rate* while the Purchase/Coal utility, which is the smallest of the six utilities and has the smallest construction budget, pays a total of $522 million in increased interest expenses, or $129 million in net present value terms at the private rate.

Despite these variations, in each case the cost of capital penalty involves millions of additional dollars on consumers' electricity bills.

3. The reliability penalty is assessed through several indirect measures in Table Ten.

Column two presents each utility's ordinary reserve margin in the year 2000 under the capital attraction scenario while column three provides that reserve margin in the year 2000 for the rate suppressive scenario. The "ordinary reserve margin" equals the utility's own capacity it has to meet load plus the capacity it has purchased from other sources. It is to be distinguished from the "own reserve margin" which only includes the

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*The net present value of $307 million appears relatively small to the total $2.6 billion penalty; but this merely reflects the fact that over $1.5 billion of the penalty occurs far out in time, after the year 2000, and thus has a lower NPV.

TABLE TEN: THE RELIABILITY PENALTY AS MEASURED BY RESERVE MARGINS AND AVERAGE AGE OF PLANT

	Ordinary Reserve Margins in the Year 2000 Under Alternative Regulatory Scenarios		Average Age of Utility Plant in the Year 2000 Under Alternative Regulatory Scenarios (in years)	
Representative Utility	Capital Attraction	Rate Suppression	Capital Attraction	Rate Suppression
Coal Conversion (1982-2000)	27.4	23.0	23.3	40.2
Coal/Nuclear (1982-2005)	15.3	4.6	21.6	25.4
Gas/Coal (1982-2009)	23.1	9.6	15.7	17.0
Gas Displacement (1982-2001)	41.0	21.0	19.4	27.0
Oil Displacement (1982-2000)	NA*	NA*	NA*	NA*
Purchase/Coal (1982-2001)	12.0	12.0	23.1	32.7

*NA means not available.

utility's own capacity. By the ordinary reserve margin criterion, several of the utilities wind up under rate suppression with reserve margins well below the 15% to 20% necessary to maintain reliability. For example, the Gas/Coal utility's reserve falls to 9.6% while the Coal/Nuclear's reserve falls to a perilously low 4.6%.

In contrast, the Coal Conversion, Gas/Coal, and Gas Displacement utilities maintain ordinary reserve margins in excess of 20% under rate suppression,* but it is important to remember two things. First, much of this reserve is in fact non-economic petroleum capacity. Second, the own reserve margin for the Gas Displacement utility is only 7%, with the difference made up in outside purchases. Similarly, while the ordinary reserve margin is both low and the same at 12% under both scenarios for the Purchase/Coal utility, there is a dramatic difference in its own reserve margin. Under the capital attraction scenario, it builds enough new plants to be entirely self-sufficient in generation and still maintain an albeit slender own reserve of 4%. However, under rate suppression, it relies on purchases for over one-third of its capacity needs and has a negative 28.5 percent own reserve. This is particularly significant because the Purchase/Coal utility has no guarantee that other utilities will build the capacity it is planning to purchase. If rate suppression is the prevailing regulatory scenario and other utilities likewise respond with capital minimization, the capacity may not exist to buy.

Our second measure of reliability is each utility's average age of plant under capital attraction versus rate suppression. These figures are displayed in columns four and five. Note that in each case, the average

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* The 41% reserve margin Gas Displacement utility under the capital attraction scenario may appear excessive, but again it is important to remember that most of that reserve is petroleum capacity which has been economically replaced by non-petroleum generation.

age of plant is higher under rate suppression because the non-retirement of plant is an important component of the utility's "capital minimization" investment and operating strategy under rate suppression.

For example, while the average age of the Coal Conversion utility's plant under the capital attraction scenario is 23.3 years, under rate suppression, its average age of plant is 40.2 years, well beyond the estimated service life of most powerplants. Similarly, the average age of the Purchase/Coal utility's plant is 23.1 years under capital attraction versus 32.7 years under rate suppression.

As argued above, the incidence of plant breakdowns is expected to increase (and reliability is likely to decrease) with plant age as the plant approaches the end of its estimated service life.

G. The effects of allowing construction work in progress (CWIP) in the rate base are presented as a final part of the analysis. These effects are explored here for several reasons.

First, a number of recent academic studies have linked this PUC policy to the cost of capital. For example, in an econometric analysis of the effect of various financial, operating, and regulatory policies on an electric utility's cost of capital, Fitzpatrick and Stitzel (1978) found that a PUC's refusal to allow CWIP in the rate base resulted in a significant increase in the cost of equity. AFUDC thus can place an enormous strain on the cash earnings of the company in terms of paying dividends and carrying charges as well as financing new construction since the AFUDC earnings are "paper" rather than real until the plant is operational.

In a more general vein, Trout (1979), Archer (1980), and Dubin and Navarro (1982) all have found that a utility's cost of capital increases with rate suppression26. In these studies, the measure of rate suppression used as the dependent variable was the rank assigned to the PUC by a collection of Wall Street investment houses. (For example, a "below average" rank corresponded to rate suppression while an "above average" rank indicated more fair and reasonable regulation.) However, in a subsequent revealed preference analysis of the Wall Street ranking process, Navarro (1983) demonstrated that regulatory rank was actually determined by two important variables (rather than the six claimed by Wall Street):[27] the return allowed by the PUC and, of relevance here, whether or not the PUC allowed any CWIP in the rate base. This last finding thus further established a causal relationship between CWIP and the cost of capital penalty.

It follows from these finding that the allowance of CWIP in the rate base helps to reduce the cost of capital penalty. If this is so, it is an interesting question as to whether the benefits of CWIP to ratepayers (via reducing the cost of capital penalty) outweigh the costs which come in the form of higher short run rates.

A second reason for examining the effects of CWIP is that in today's economy, the possibility arises that a utility may be reluctant to pursue a more economic capital-intensive investment and operating strategy even if it is guaranteed that it will earn its market cost of capital. The argument that a utility needs not only a fair return but also some CWIP in the rate base runs as follows:

Because of inflation and the soaring cost of building new powerplants, construction work in progress has grown to be an increasingly large share of a utility's total assets -- in some cases over 50%. Unless the utility earns a cash return on some of this CWIP (as opposed to the "paper earnings" of AFUDC), it will be unwilling to undertake that construction; the risk of being unable to finance such a large program from its relatively small asset base will become too high.[28]

Whether or not one finds this argument persuasive, it nonetheless raises a second interesting question which an analysis of the effects of CWIP on rates can answer. In particular, we have thus far found that under a plausible set of discount rates, there are net benefits to ratepayers associated with a PUC raising a utility's rate of return to its market cost of capital. However, these net benefits are predicated on the assumption that the utility will actually undertake that capital investment and operating strategy described in the capital attraction scenario. If allowing some CWIP in the rate base is a further necessary incentive to insure that the utility actually adopts the most economic strategy, the question becomes to what extent (if any) will CWIP reduce those net benefits to ratepayers?

Table Eleven illustrates the effects on revenue requirements of a PUC policy which allows fifty percent CWIP in the rate base versus a policy of allowing zero CWIP. Columns two and three provide net present values for the private and social discount rates, respectively, while column four provides the IRRs.

The results are interesting in that they suggest that under certain conditions using CWIP as a source of financing, CWIP actually saves consumers money. In particular, if one compares Table Seven to Table Eleven, the use of CWIP clearly reduces consumer benefits for several utilities. For example, ratepayers of the Gas/Coal utility see the benefits of the Capital Attraction reduced slightly by CWIP from $2,302 million (Table 7, TABLE ELEVEN: THE COSTS OF ALLOWING 50% CONSTRUCTION WORK IN PROGRESS (CWIP) IN RATE BASE

Representative Utility	NPV of Benefits to Ratepayers Under 50% CWIP Private Discount Rate (milions of dollars)	NPV of Benefits to Ratepayers Under 50% CWIP Social Discount Rate (millions of dollars)	Internal Rate of Return
Coal Conversion (1982-2000)	1,842	2,623	.49
Coal/Nuclear (1982-2005)	1,189	2,313	.23
Gas/Coal (1982-2009)	2,259	4,140	.33
Gas Displacement (1982-2001)	3,308	5,366	.38
Oil Displacement (1982-2000)	1,709	2,962	.25
Purchase/Coal (1982-2001)	573	910	.33

col. 2) to $2,259 million (Table 11, col. 2) and the IRR is reduced from .36 to .33. However, for some utilities benefits are higher with CWIP. For example, ratepayers of the Coal/Nuclear utility realize a net increase in benefits from CWIP from $242 million (Table 7, col. 2) without CWIP to $1.2 billion (Table 11, col. 2) with 50% CWIP while the IRR rises to a robust 23% (Table 11, col. 4). Similarly, the Coal Conversion utility increases benefits to consumers under CWIP by 43%, from $1,289 million (Table 7, col. 2) to $1,842 million (Table 11, col. 2). Accordingly, the IRR to ratepayers rises from .40 to .49.

V. Summary

The results of the forecasting analysis provide conclusive evidence that the welfare of electricity ratepayers may be substantially reduced when PUCs adopt policies which prevent a utility from earning its market cost of capital, i.e., when rates are suppressed.

Rate suppression creates incentives for a utility to adopt a non-economic investment and operating strategy (from the ratepayer's point of view): the utility chooses a level of capital investment which is less than that which would minimize revenue requirements (the Reverse AJ effect). At the same time, rate suppression also increases a utility's cost of capital. Together, these effects in turn impose fuel, cost of capital, and reliability penalties on the ratepayer. The paradoxical result is that ratepayers actually pay higher rates under rate suppression over the long run.

In addition, rate suppression was found to conflict with the national energy policy goal of reducing foreign petroleum import dependence: there was a dramatic increase in petroleum consumption (and hence foreign imports) for each of the five petroleum-dependent utilities operating under rate suppressive regulation.

The analysis also yielded several indirect measures of the reliability penalty imposed by rate suppression. These measures (reserve margins and average age of plant) likewise lent strong support to the hypothesis that the reliability of electricity service is likely to suffer under rate suppressive regulation.

Footnotes

1. The relevant decisions are Bluefield Co. v. Public Service Commission, 262 U.S. 679 (1922) and Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944).

2. On this, see Navarro, P., Petersen, Bruce C., and Stauffer, Thomas R., "A Critical Comparison of Utility-type Ratemaking Methodologies in Oil Pipeline Regulation," Bell Journal of Economics Vol. 12, No. 2, Autumn 1981.

3. Brigham, Euguene F. and Shome, Diplip K. "Equity Risk Premiums in the 1980's."

4. Edison Electric Institute.

5. Ibid.

6. For a summary of PUC characteristics, including average regulatory lag, see Merrill, Lynch, Pierce, Fenner and Smith's periodical Utility Research - Recent Regulatory Decisions and Trends.

7. A second source of earnings erosion, often referred to as "earnings attrition" is continuing capital investment during the rate period.

After new rates are approved and placed into effect, capital outlay for new plant facilities continues. The capital invested after the end of the "test-year" is neglected in the rate-making process and thus this incremental capital earns zero return and erodes the earnings on that capital which was included in the rate-making process.

The severity of this component of attrition will vary from company to company depending on the magnitude of the construction program in relation to the capital included in the rate base and depending on the rate used for the AFUDC credit. One way to reduce earnings attrition is for the PUC to grant an attrition allowance.

8. The political advantage of a fair value rate base should be apparent: the PUC can raise rates based on, say, a 6% return on a fair value rate base rather than a more highly visible 16% to 18% return on an original cost rate base.

9. State PUC differences are typically tabulated in the National Association of Regulatory Utility Commissioners "Annual Report on Utility and Carrier Regulation."

10. New England Electric System Research Department. Note that the capital costs of the conversion yield a carrying charge of roughly $50 million per year so that the net saving to consumers is $60 million per year.

11. For discussion, see Navarro, P. "The Soft, Hard, or Smart Path: Charting the Electric Utility Industry's Future." Public Utilities Fortnightly, June 18, 1981.

12. Northeast Utilities Research Department.

13. In the case of old coal plants, non-retirement creates an environmental, rather than economic, problem: old coal plants generate electricity at costs roughly comparable (and sometimes less) than new coal plants. But they do so because they lack the expensive pollution control technologies required of new plants by the Clean Air Act. Thus, they typically emit substantially higher volumes of air pollution. Similarly, older oil plants also typically emit more air pollution than a new coal or nuclear powerplant would.

14. Public Service of Colorado Research Department.

15. For further details, see Stauffer, Thomas R., and Navarro, P. "The Public May be the Big Loser in Pilgrim Power-Plant Cancellation." Boston Globe, October 14, 1981.

16. The relevant studies include: Archer, S. H., "The Regulatory Effects of Cost of Capital in Electric Utilities." Public Utilities Fortnightly February 26, 1981; Dubin, J., and Navarro, P., "Regulatory Climate and the Cost of Capital." in Issues in Utility Economics, edited by Crew, Michael, Lexington Books, Fall, 1982; Pinches, G. E., Singleton, J.C., and Jahan Khani, A. "Fixed Coverage as a Determinant of Electricity Utility Bond Ratings." Financial Management Association 1978; Trout, R. R., "The Regulatory Factor and Electric Utility Common Stock Investment Values." Public Utilities Fortnightly, November 22, 1979.

17. Northeast Utilities Research Department.

18. Massachusetts Department of Public Utilities order DPU 906, April 30, 1982.

19. Ibid.

20. Corio, Marie R. "Why is the Performance of Electric Generating Units Declining?" Public Utilities Fortnightly, April 29, 1982.

21. For example, see Brigham and Shome, footnote 3 above.

22. For example, compare Brigham and Shome's 14% estimate of the market cost of equity for the utility industry with Edison Electric Institute's report of the 11% realized rate of return for the 1974-80 period.

23. Two-Market Analysis of Natural Gas Decontrol. U.S. Department of Energy, Office of Policy, Planning and Analysis, Division of Energy Deregulation, November 1981.

24. Technical Assessment Guide. Electric Power Research Institute 1982.

25. Supplementary data sources included company annual reports and Federal Energy Regulatory Commission Form One's.

26. See footnote sixteen.

27. Navarro, P., "How Wall Street Ranks the Public Utility Commissions," Financial Analysts Journal, forthcoming.

28. If CWIP, i.e., plant being built, is allowed in the rate base, the utility is allowed to earn an immediate cash return on that investment on a "build as you go" basis. Thus, it begins to earn on a return on new plant construction even while that new plant is being built.

Alternatively, the PUC may allow the utility to add an allowance for funds used during construction (AFUDC) to the new plant's cost. Such an allowance is calculated by multiplying accrued capital expenditures on a new project times an AFUDC rate, typically the utility's weighted average cost of capital. This AFUDC allowance is then is put into a separate account as a non-cash credit on an annual basis until the new powerplant is finished. Once operational, the actual capital expenditures on the new plant are put into the rate base along with the accrued non-cash AFUDC credit which is added to actual expenditures. (For both CWIP and the AFUDC allowance, nothing is put into the rate base until a rate case is adjudicated).

☆U.S. GOVERNMENT PRINTING OFFICE: 1983 381060 4127

THE SECRETARY OF ENERGY
WASHINGTON, D.C. 20585

February 6, 1984

Honorable James T. Broyhill
House of Representatives
Washington, D.C. 20515

Dear Mr. Broyhill:

The Committee on Energy and Commerce has approved for full House consideration a bill (H.R. 555) to regulate the inclusion of the costs of Construction-Work-in-Progress (CWIP) in electric utility rate bases under the jurisdiction of the Federal Energy Regulatory Commission (FERC). The proposed legislation would reverse a recent unanimous FERC rulemaking, made after extensive consideration and public comment, that allows up to 50 percent of a utility company's construction expenditures to be included in its rate base as these expenses are incurred, subject to strict conditions.

The Department of Energy opposes H.R. 555. The exclusion of Construction-Work-in-Progress from the rate base can lead to distorted investment decisions by raising the cost of capital-intensive resources. By accumulating the interest costs during construction of new generating facilities, consumers end up paying interest on interest and getting hit with "rate shock" when new capital-intensive facilities are put into service. Because of the difficulty in financing the higher capital cost, H.R. 555 would provide a disincentive to employ technologies with lower operating costs, such as hydro, solar, wind, and nuclear power. They will rely instead on low capital cost but fuel-intensive technologies, such as those that burn oil and gas. By discouraging those technologies which offer a cost-effective alternative to oil and gas as a generating fuel, H.R. 555 would reduce the balance and diversity in our nation's electric power system. The unfortunate legacy of such legislation would be higher electricity prices and a less reliable electric power system.

We support the recent FERC rulemaking on Construction-Work-in-Progress. It is a responsible and well-reasoned step which recognizes the difficulties utility companies face today financing the electric power investments which will sustain our economy in the future. The FERC rulemaking is supportive of the national energy policy goal of assuring an adequate and diverse energy supply at a reasonable cost, as expressed in the recent National Energy Policy Plan.

Electricity is a fundamental requirement for long term economic growth. We can not afford legislation which unnecessarily preempts the considered decisions of our regulatory institutions and casts a shadow over the adequacy and efficiency of our nation's electricity supplies. For this reason I urge you to vote against H.R. 555 and to allow the recent FERC rulemaking to stand.

Sincerely,

Donald Paul Hodel

DONALD PAUL HODEL

Senator MURKOWSKI. Thank you very much, Mr. Mares. We appreciate your testimony and your effort to summarize your statement.

I'm sure that Senator Chafee has a question or two that he would like to direct so I am going to be very brief.

I have reviewed the testimony of Senator Pell and Senator Chafee, and can certainly appreciate their concern, given their dependence on power generated from outside the State of Rhode Island. As was stated, four-fifths is generated outside.

I recognize the considerable contribution that CWIP can make in financing costs, if, indeed, you can pass these on during construction, I'm severely concerned over the notes that both Senators make of the vulnerability of ratepayers in situations where plants might not be completed; where the ratepayer, rather than the shareholder, would be held responsible for the costs where a plant might not be completed. I would like to know how you respond to that concern.

You have the responsibility for setting the rates for the four-fifths of power that comes into Rhode Island, but you don't have the responsibility associated with whether or not the plant is finished. With the concern and recognition that nuclear plants are having a good deal of difficulty—to put it mildly—what assurance can you give the ratepayers that they won't end up paying for something that is never built, or something that poor management within the utility dictated an extraordinary risk? Isn't it more likely that management won't be as responsive with their own risk and the risk of their own shareholders as they would knowing that whatever decision they make, the ratepayers' are going to pay if it isn't a sound decision?

Mr. O'CONNOR. Mismanagement to me equates with imprudence.

Senator MURKOWSKI. That doesn't mean it doesn't occur.

Mr. O'CONNOR. That's correct. A primary feature of the rule, as far as I'm concerned, is the filing-by-filing, case-by-case, nonautomatic determination as to whether CWIP should be included in the rate base.

So I think the answer to that from an economic regulator's point of view, is that the evaluation and the testing of the construction program on a case-by-case, filing-by-filing under the rule will be the primary focus for picking up mismanagement, imprudence. That is a filing requirement of the rule.

Senator MURKOWSKI. Well, Senator Pell indicated that the Seabrook nuclear powerplant narrowly missed being charged for CWIP.

Are you saying that the system is working, as evidenced by CWIP?

Mr. O'CONNOR. No. I'm saying that under the old rule the financial distress test which was controlling; over several years of experience with that rule nobody qualified.

In my written statement submitted for the record, there is an extensive discussion of conditions preceeding the Commission's rule as discussed in the 1980 GAO report and the criticized 1976 rule's financial distress test as being too general and too vague. It was a test under which nobody could qualify. That led to extensive hearings and investigations by the Commission culminating in a new

FERC rule in 1983, which is before the courts, by the way. It is also an issue in many of the cases pending before the Commission.

But the imprudence aspect of investigation under this rule is critical to its successful operation. And this is an issue in all the cases pending.

The prudence of a utility's construction costs can be looked at at the end of the process under the AFUDC method, or in the beginning on a continuing case-by-case, filing-by-filing basis under the CWIP approach as utilities come in and request to include these costs in the rate base; I would suggest that the latter approach of looking at it filing-by- filing, case-by-case during the construction period would be the more responsible economic regulation.

And looking at the costs at that time is preferable examining costs after the fact as under the AFUDC approach. With many of these so-called troubled utilities and troubled individual plants, like Shokeham, like Seabrook, like Midland, like Indiana, et cetera, I think it's far more prudent, far more consistent with sound economic regulation and the mandate of Congress' to be looking at the long-term adequate supply and the just and reasonable rates on an individual case-by-case basis as costs are being claimed. Because at that point in time the prudence issue can be decided more easily than not when $3 to $4 billion has been invested in an individual unit.

Senator MURKOWSKI. Well, I understand what you're saying about the application of the prudence question. But you don't deny that under CWIP, the exposure for a noncompleted plant, or the exposure for poor management decision can and does rest ultimately with the consumer?

Mr. O'CONNOR. Well, I——

Senator MURKOWSKI. Yes or no.

Mr. O'CONNOR. Yes and no.

Mr. MARES. Very, very little, Senator.

Senator MURKOWSKI. Well, why is it very little? Who is going to make up that difference? The shareholder isn't.

Mr. MARES. As the chairman has mentioned, the Federal Energy Regulatory Commission takes into account all the facts along the way at several stages. If there is an abandonment situation which is presented from a ratemaking—in the ratemaking process, for sure, the Federal Energy Regulatory Commission will take that into account.

What we're talking about here is the fundamental issue, are we going to encourage rational business people to invest for an economic long-term supply, and that's fundamental to providing an adequate supply to this country at reasonable cost long term.

We encourage investment in this country to allow efficient use of raw materials. We are discouraging that today. There's clear evidence that we have a situation where utilities do not invest in the most cost-effective way to supply this.

Senator MURKOWSKI. Well, the Chair understands that.

Has the Commission ever denied passthrough of costs of canceled or abandoned facilities?

Mr. O'CONNOR. To my knowledge and recollection, although I'll have the details of that submitted for the record, I would say the answer is in the negative, with the exception of a sharing of certain financing costs after abandonment. After abandonment, the prudently incurred costs up until that point may be amortized, so there is a return of the investment which is for the ratepayers. There's no return on the investment though, in that the financing costs on the unamortized balance are picked up by the shareholders. So there is a sharing after the abandonment.

Senator MURKOWSKI. Senator Chafee.

Senator CHAFEE. Thank you, Mr. Chairman.

I'd like to follow up on that question of the chairman.

On the bottom of page 12, Chairman O'Connor, you say, 'Treatment of Abandoned Projects: the Commission's policy regarding abandoned projects precludes the utilities from recovering any abandoned project costs that were not prudently incurred."

Now, as I understood it the answer you gave was no.

My question is, Have you ever determined that some abandoned project, the costs were not prudently incurred?

Mr. O'CONNOR. I believe the answer is in the negative, but I would like to research that. The abandonment policy of the Commission is a policy that spans several years. It has been upheld in the courts and——

Senator CHAFEE. Oh, I'm not challenging——

Mr. O'CONNOR. The answer is, I think, no.

Senator CHAFEE. Well, I would suspect the answer is no. I suspect that the Commission, not because of you or anything else, but I just suspect they're very, very reluctant to say somebody wasn't prudent in the management.

So it seems to me here's the point that we have been making, Senator Pell and I, that there isn't a break on the imprudent utility.

Mr. O'CONNOR. May I interrupt for 1 second, please, Senator?

Senator CHAFEE. Yes.

Mr. O'CONNOR. I think you're going to the very crux of how I see this rule. I wasn't here when it was voted on, but I do endorse it.

When does the Commission look at the prudence or the mismanagement of a utility's program? Generally speaking, prior to the 1983 rule—certainly it has been true in most of the States, I think—the prudence issue is looked at at the end of the process.

For many, many years, the construction programs of utilities were more or less deemed to be prudent, until the problems in the mid-70's and the late-70's started to hit the industry.

So as far as the plants that are well along in construction are concerned—those that are 50, 60, 70, and even up to 98 percent complete—the prudence is being looked at at the tail-end of the process when several billion dollars are involved, records are old, memories are stale, and discovery is tremendously burdensome. Trying to resurrect and, in effect, go back several years to determine whether or not a prudent decision was made is very, very difficult.

Senator CHAFEE. Oh, I recognize that.

Mr. O'CONNOR. My point is and I think the point of the Commission in this rule is that this prudence issue will be looked at. Indeed, it is a filing requirement for the utility company that the prudence issue will be looked at filing-by-filing, each request that a company makes under the filing requirements. And I'd be delighted to submit the requirements for the record. They must file and justify their 10-year construction program, their least-cost strategies, their prudent investment. These filings will be looked at on a current basis when all the decisions are fresh in everybody's mind.

Senator CHAFEE. Now, when FERC came out with this order, there had been some Commission analyses on this, it's my understanding.

Now, on page 106 of the order which was based on the analysis it says, and I quote, "No present value analysis will show the trip base rates are less costly to customers than AFUDC based rates."

In other words, we're not getting anywhere with—you're not giving us something that's going to be less costly to the consumer based on your own Commission's analysis.

Mr. O'CONNOR. Well, I'm not familiar with that detail of the order. I'm not trying to duck it, but I wasn't here at the time that it was passed. But the fact of the matter is, our analysis—and I'd be glad to submit it for the record likewise—our analysis shows that over a long-term period the interest-on-interest type concept under the AFUDC approach leads to higher cost, it leads to disincentives to invest, and I think both during and after the in-service date of plants, it leads to higher long-term cost to the ratepayers.

Senator CHAFEE. Well, the point I'd like to make, Mr. Chairman, here, it isn't "we" who have proposed this legislation of changing the rules, it's you who have changed the rules and we're trying to go back to the old rules.

Mr. O'CONNOR. I understand. We concluded that the old rules didn't work.

Senator CHAFEE. Well, that may be, but it seems to me the burden of the proof is on you, not on us.

Mr. O'CONNOR. Absolutely. I agree with you, Senator.

Senator CHAFEE. You have the rate-making power, and you have the ability to issue these orders, but it seems to me you have got to make a case; and your case, as far as I'm concerned, has not been made.

Sure the industry has got problems, but inflation isn't something that was created in the last year and a half. Inflation was around for a long, long time before this order came out, and so were environmental delays in construction, and so were a host of other problems. But suddenly, bang, you come out with this when the inflation is going down.

You don't have inflation of 14 percent, you've got inflation of 4 percent. So what prompts this?

Mr. O'CONNOR. Well, what prompts it is that the prior test was a test under which nobody could qualify.

The situation we find ourselves in today, particularly with the so-called problem companies, problem units, were primarily created during an AFUDC methodology approach.

And I would suggest the primary reason for the evaluation and economic justification for the construction programs were insufficient for the review responsibility that an economic regulator does and should have.

The final requirement under the CWIP rule is that we have the responsibility now to look at construction programs and to evaluate them on an ongoing basis. And the company is required to fulfill these filing requirements. It's mandatory.

Senator CHAFEE. OK. Well, thank you.

Mr. O'CONNOR. Thank you, Senator.

Senator CHAFEE. These are good witnesses, and I know we have got a host of other witnesses, so we will have a chance to cover this. I want to thank the Assistant Secretary.

Mr. O'CONNOR. Thank you, Senator. Thank you, Mr. Chairman.

Senator MURKOWSKI. I would like to pick up on one point that was made by Senator Chafee. The old system didn't work. It applied in three specific situations.

Isn't it true that the old system did work in regard to CWIP costs under three separate circumstances? So there was relief, but the relief was more equitable, was it not, to both the consumer and the shareholder if those criteria were met? Now we're saying it's virtually unlimited, it's all loaded on to the consumer.

Mr. O'CONNOR. Under the new rule?

Senator MURKOWSKI. As far as exposure is concerned.

Mr. O'CONNOR. As far as the exposure is concerned, the exposure is driven by the prudent investment.

Senator MURKOWSKI. I know, but why is it necessary for the change? I understand what you're saying, and I don't disagree with your charts, but the old system did work. You know, financing was available for sound projects.

Mr. O'CONNOR. To understand the reason for the change, I think we will just have to look at the goals that have been established. The goals are to encourage least-cost investment and looking at alternative strategies.

Senator MURKOWSKI. Well I know, but those are generalizations. The fact that the industry functioned, developed and built utility systems under the old system——

Mr. O'CONNOR. The CWIP in rate base approach is basically tool to improve the AFUDC method which was not in the best interest of ratepayers or the shareholders. And the reason is because it had contributed to higher cost. The higher costs are related to both the deteriorating financial condition of the industry as a whole and——

Senator MURKOWSKI. Well, that's very important.

Mr. O'CONNOR [continuing]. And under the old rules or what I referred to as the part of the——

Senator MURKOWSKI. It won't work to give the ratepayers an option, it's got to be one way or the other?

Mr. O'CONNOR. Well, the ratepayers have—they're supposed to have the economic regulators replacing competitive forces because they're buying from a monopoly. It's the responsibility of the economic regulators to look at the decisionmaking and the prudence of those decisions which drive the impact on the ratepayers.

That's part of the responsibility of the economic regulator, and that's what's in the mandatory filing requirements under the 1983 CWIP ruling.

Senator MURKOWSKI. There are 9 states that do not allow CWIP in their rate base or any application of CWIP.

Do any state public utility commissions allow CWIP in rate bases?

Mr. O'Connor. At the time of the evaluation of this rulemaking—my recollection is 33 States allowed some portion of CWIP in the rate base.

Several States did not allow it. Several States did not allow it as a result of the regulatory agency's policy, and there were several States that did not allow it pursuant to the statute.

Senator Murkowski. Well now, you can appreciate the position of a State that's so dependent on power coming in from outside.

Mr. O'Connor. Yes, I do.

Senator Murkowski. And it's another example—certainly an extreme one—but one where I,representing the State of Alaska,feel that in my State, whilewe make laws uniform throughout the country, their application is not necessarily uniform, particularly with respect to an individual State. I think that Rhode Island can certainly make a case of feeling very uncomfortable because of their dependence on outside energy, their not having the ability to control the rate structure within their State, and their being totally dependent on your agency.

And I don't think we have necessarily made a case yet why the old system didn't work, because it did cover those three areas of pollution control, fuel conversion, and financial hardship.

Mr. O'Connor. Well, I understand about the financial distress part of it.

Senator Murkowski. Well, I know. But at the same token, who's responsibility is it to share that. You have made a good case for the impact of overall lower rates, assuming everything else goes well and there's no particular distress or collapse of the project. But if there's a collapse or distress or a consequence of poor management, why we all know who's going to pick up that exposure.

Mr. O'Connor. Under our current rule, there will be a determination of imprudence or prudence.

Senator Murkowski. That's awfully hard to——

Mr. O'Connor. I'll agree with that.

Senator Murkowski [continuing]. Measure, you know. Every loan is a good loan when you make it and——

Mr. O'Connor. I used to be a commercial banker, too. I know. I agree with that. But I would suggest that it is far preferable to be looking at the prudence issue on a filing-by-filing, case-by-case basis rather than looking at it after several billions of dollars is in the plant and you're trying to look back several years and trying to determine retroactively where the imprudence took place during the 7-year period, and you're dealing with billions of dollars.

I would suggest it would be a little bit easier making a prudent decision on prudence when you're dealing with a smaller number than when you're dealing with billions of dollars.

Senator Murkowski. That's true. But even in small numbers, prudence can be like——

Mr. O'Connor. That's true. The staff of the New York Public Service Commission has just made a prudence review of the Shoreham Plant. After 12 or 14 months of work, with 25 staff people, professionals primarily, the staff has made a recommendation to the New York Commission that they consider $4.5 billion at the Shoreham Plant to be imprudent.

Senator MURKOWSKI. I understand that you have 15 pending CWIP applications before you.

Mr. O'CONNOR. That's correct.

Senator MURKOWSKI. Are you looking at prudence on these?

Mr. O'CONNOR. Every one of them. And I would suggest to Senator Chafee that I am very sympathetic with the concentration of responsibility there. I have read the Greenhouse report. I'm trying to familiarize myself with the local situation in Rhode Island, and I can assure you that we will be looking at it very closely.

Senator MURKOWSKI. Is there any way that the residents of Rhode Island who are concerned about the exposure associated with the application of CWIP could opt out?

We have a lot of things around here that you can opt in and opt out, and if they're not convinced that that chart is the best in their best interest to get a leveling of rate structure that they could opt for the old way and just concern themselves with the responsibility for the three areas, or is it absolutely mandatory under the Federal law that it be uniform throughout the country as far as the application of CWIP is concerned?

Mr. O'CONNOR. Well, relative to the rule the wholesale customers can opt out. And the way they can opt out is——

Senator MURKOWSKI. Can, or cannot?

Mr. O'CONNOR. They can. This responds to on the so-called double whammy concern. A customer can opt out if he can show that he is not responsible for the planning decision for this construction program—and that will be considered because the filing requirements have a ten-year program that must be looked at and must be justified by the applicant, and also can show that indeed he will not take power from that particular plant where CWIP is being applied for when it goes into service.

So there is a significant opt-out option relative to the customers the FERC jurisdiction is concerned with.

Senator MURKOWSKI. I don't know if that give Senator Chafee any feeling of relief.

Senator CHAFEE. Well, that doesn't give us much consolation, because I think the final part of your mention was that they could choose not to take the power did you say?

Mr. O'CONNOR. If they have made other arrangements, yes.

Senator CHAFEE. It's pretty hard to make other arrangements when all your power is coming from one place.

Mr. O'CONNOR. It is a concern.

Senator CHAFEE. I'm not sure that's a valid option.

Mr. O'CONNOR. Well relative to Rhode Island I will agree with you, it probably is not. But the question of opting out was not disregarded in the considerations by the Federal Energy Regulatory Commission.

Senator CHAFEE. OK, Mr. Chairman.

Senator MURKOWSKI. I think we have exhausted these witnesses.

We appreciate your excellent testimony, and I think it has been a substantial addition to the record.

Mr. MARES. Senator, could I make just one comment?

Senator MURKOWSKI. Please, Mr. Mares.

Mr. MARES. We're not talking about the fact that there is—we recognize there is a surplus of power today in this country.

The thing that we at the Department of Energy are fundamentally worried about, and I think that FERC is, too, by virtue of this rule, is what is going to happen in this country as the reserve margins start to close and get down to where they had been? We think that will happen if you have a 2½ to 3 percent annual growth in electricity demand by the early 1990's. The environment that I think all consumers want is to have the supplier of electricity have a reliable supply that can meet that consumer's needs at reasonable costs.

Today the financial circumstances related around the CWIP issue discourage that, and we have a situation where we're discouraging cost-effective investment which is going to adversely affect the consumer in the long term.

Fundamentally, that's what the argument is all about. The fact that we're asking people to pay now for a long-term supply in some fashion has the same characteristics that we invest in R&D, for the future, health and vitality of this country. That's what the argument's about, sir.

Senator CHAFEE. Well, I don't want to prolong this, because we have had three witnesses in 1 hour and 15 minutes, so this is going to be a long morning. But let me just say this. Sure, there are problems with the utilities, but I don't think this is the solution to them. I mean there are all kinds of difficulties, environmental and a whole host of other challenges that the utilities face in raising capital and raising debt, acquiring funds through either debt or equity. But I don't think you have struck at the solution through this.

Mr. O'CONNOR. There is no one solution, Senator, I would suggest.

Senator CHAFEE. I suspect probably there isn't any one solution, but I'm not very happy with this one.

Mr. O'CONNOR. I can understand that.

Senator MURKOWSKI. Well, I think as Secretary Mares has indicated, you know, his responsibility in his position to provide for the very cheapest source ultimately of energy for this nation by promoting an environment where that can occur. I commend you and I commend the Department of Energy.

I think there is a natural reluctance on the part of the ratepayer when he sees what's going on around him. He's confused by the situation within the industry, particularly with respect to the impact of our policy towards nuclear energy. And he is very, very concerned about throwing himself on the whims of a Government agency—in all due respect to FERC. He can't relate to it like he can his own utility commission within his State, because they don't have the jurisdiction in this case. And, you know, I can understand why he or she might not sleep too well at night, knowing that they have given, in effect, a broad carte blanc to a Government agency that if things go wrong they've got some exposure, and they have no apparent relief from that exposure.

So I think it's quite logical that you would expect this type of concern. I think that you're both very responsible in your own individual approach. I think perhaps Senator Chafee summed it up, you know, that you've got two different points of view because you have the unique situation where people of Rhode Island can't participate directly in the process because they're dependent on going through the establishment of the full Commission. But that's the way it is, and with that observation we will excuse the panel.

Mr. O'CONNOR. I would just like to say to the committee and Senator Chafee that we will be as responsible to the citizens of Rhode Island as we possibly can.

Senator CHAFEE. Thank you very much.

Thank you, Mr. Chairman.

Senator MURKOWSKI. We will advise the witnesses that additional questions may be directed to them, and we would appreciate your response to the written questions as soon as possible.

Thank you, Chairman O'Connor. Thank you, Secretary Mares.

Mr. O'CONNOR. Thank you, Mr. Chairman.

Senator MURKOWSKI. The next panel will be the Honorable Dennis J. Roberts, attorney general, State of Rhode Island, and the Honorable Mary Kilmarx, commissioner, public utilities commission, State of Rhode Island.

I believe Senator Chafee has something to say.

Senator CHAFEE. Mr. Chairman, on behalf of myself and Senator Pell, I'm delighted to welcome as witnesses the Honorable Dennis J. Roberts, who has been attorney general of our State for several years now. And he's from a family long-distinguished in service to Rhode Island, in which he, himself, is conducting his office with a great skill.

And Ms. Kilmarx, who was formerly a member of our state legislature, and then was an adviser to the Governor, and is now one of our three public utilities commission commissioners, where she also serves with distinction.

So we're delighted to have you both here, and thanks for coming down.

Ms. KILMARX. Thank you, Senator.

Senator MURKOWSKI. You may proceed in any order you wish. And as I indicated to the first panel, I'm going to keep to the 5-minute rule. The questions are something else again.

Senator CHAFEE. Mr. Chairman, I don't think that these witnesses were here when I said that I have to go over to the floor in about 5 minutes.

So if you would excuse me. I'm sorry I won't be able to stay for your full statement. Unfortunately, I have this commitment—and there go these bells—so I will stay as long as I can.

Senator MURKOWSKI. I will vouch for the fact that he did say it.

Senator CHAFEE. So we look forward to your statements.

STATEMENT OF DENNIS J. ROBERTS II, ATTORNEY GENERAL, STATE OF RHODE ISLAND

Mr. ROBERTS. Mr. Chairman, Senator Chafee, Senator Melcher.

I appreciate the opportunity to be here this morning to express my views from, as Senator Pell and Senator Chafee have indicated, the rather unique perspective of the State of Rhode Island.

We think it's unique from a number of points of view, Mr. Chairman. It can be stated variously, I guess. Over two-thirds of Rhode Island retail electric rates are effectively set by the Federal Energy Regulatory Commission and pass through to ratepayers in Rhode

Island without the opportunity for review by the State commission because of the supremacy clause.

It can be stated that two-thirds of all filings for CWIP under Order No. 298 in dollar value have been filed by jurisdictional utilities which service the State of Rhode Island. It can be stated that Rhode Island—except for the State of Delaware—is the only State in the Union which is taken care of 100 percent—except for Block Island—of its electric utility requirements by companies which are totally regulated by the Federal Energy Regulatory Commission, and then flow through affiliates into the State. So in any sense, it's unique.

I want to commend Senator Chafee for sponsoring, and Senator Pell for cosponsoring this legislation, which I think is good consumer legislation, but to use Senator Chafee's phrase, I would recommend that we do go back to the old rule which would eliminate any consideration for construction work in progress in rate base, which was the rule followed by many, many years—still is the rule followed by the State commission in the State of Rhode Island.

At the theoretical level, I would submit what is at issue here is the oldest and most basic principle of utility regulation, the used and useful principle. That is, that an asset is not entitled to put in the rate base to have a return earned on it until such time as it is used and useful for the provision of utility services.

I do not appear before the committee today, Mr. Chairman, Senator Chafee, to advocate inadequate utility rates. In any utility rate case, a utility is entitled to compensatory nonconfiscatory rates. That's true in any rate case. That's always been true, and it has led to a very healthy electric utility industry, I would submit.

In any electric utility—or any utility rate case for that matter, we always argue about what is the risk to investor; how should the risk to investors be measured; how should the risk to the investors be reflected in the rate of return to be allowed by that commission to that utility; what's the relative balance of investor versus consumer interest. These are things which are reflected under the old rules and Senator Chafee's phrase in the rate of return calculation, Mr. Chairman.

They're also taken care of by provisions for emergency relief. I don't know, quite frankly, what Chairman O'Connor was referring to, or I don't know what conclusion he wished to have drawn by suggesting that no one ever qualified for emergency relief. I would think any responsible commission having before it a utility which was entitled to emergency relief should grant that relief where that test can be met.

Senator MURKOWSKI. We will submit that question. It will be available to you in the public record.

Mr. ROBERTS. Very good, sir. I would think that would be a very strong argument against including CWIP in the base rate of utilities, gentlemen.

It seems to me—it's been addressed here before and I won't go over it, but that's the abandonment issue. The abandonment of substantial amounts of investment.

Again, during questioning of the prior panel, the issue was raised about prudence. Prudence is an after-the-fact judgment, Mr. Chairman and Senator Chafee.

CWIP is going to rate base just as the company accounts for it in rate base. The timing is wrong. CWIP gives a return on investment for a period possibly years between the time that the investment is initially made and the time that the plant's abandoned. Abandonment essentially with the maturation of CWIP is a bad idea, in my humble judgment.

If I can pass off just briefly, I want to get off the theoretical and get on to a case history, if I may, Mr. Chairman, for a couple of minutes. I know you're holding to your rule.

Senator MURKOWSKI. Yes. You have about 2½ or 3 minutes.

Mr. ROBERTS. Well, I broke it up nicely then. Fine. I have taken the first half for theoretical. I'm going to go to case history for the second half.

The timing of the New England Power Co., which is the major utility servicing—the largest one servicing Rhode Island, is very interesting.

Just prior to the publication of the Order No. 298, we had settled—the State had settled with New England Power Co. on a wholesale rate, W-5, so-called, at which they settled out, in round numbers, for $30 million on a $50 million filing, accepting that that was a just and fair return on their investment at that time.

Subsequently to the filing—subsequently to 29 days to the adoption of Order No. 298, New England Power went before the Commission with a new filing of some $70 million, of which some $60 million—again I'm using round numbers—represented CWIP.

We are now presently in litigation at the Federal Energy Regulatory Commission over this CWIP issue, which is now worth $41 million.

I'm summarizing very quickly to keep within my time.

I would like to read briefly a statement by Mr. Nichols, who I believe may be testifying here this morning, the chairman of New England Electric System, in a 1983 report to the shareholders. "Dear Shareholder:"—he writes. "1983 was a good year for New England Electric with earnings per average share of a record $5.48. The system's average annual earnings growth rate is 11 percent for the past 5 years. In February, the directors increased the quarterly dividend from 75 to 80 cents a share."

He goes on to point out, "Dividends have been raised eight times in 5 years."

The Federal Energy Regulatory Commission, under Order No. 298, has made it possible for a utility which can afford to distribute 59 percent of its earnings in dividends raise its dividend eight times in 5 years to ask for the financing of capital plant expansion through CWIP charges to its ratepayers.

This at a time when its affiliate in Rhode Island, Narragansett Electric Co., as well as New England Power Co. itself, has substantial excess capacity. In fact, in Rhode Island they have approved—they have proposed, and I understand my friends at the commission have approved what I regard, quite frankly—Mary, you'll excuse me—as a highly discriminatory rate for the Narragansett plant, giving favorable rate treatment to large industrial customers under circumstances where, quite frankly, they really shouldn't be doing it.

It's important to note the status of that litigation. This very healthy, perhaps the most healthy utility in the country seeking the $41 million additional.

The currently pending rate case, Mr. Chairman, we have severed out the CWIP issue for separate trial. Some weeks ago I filed on behalf of the State the testimony of three witnesses, Chairman Burke of the PUC, a representative of a business group, who testifies that business is not competitive because of the electric rates in the State, and a Mr. Rothschild, who is a technical witness on the status of the company.

Senator **Murkowski**. Would you summarize your statement now, please?

Mr. **Roberts**. Yes, sir. I have about two sentences left to go.

The company last week, or 2 weeks ago moved to strike that evidence as not being relevant and more or less said whether or not it has this impact on the State of Rhode Island, it's not relevant to our consideration at the commission because we're entitled to this $41 million under a literal reading of Order No. 298.

And I think he's right. Under a literal reading of Order No. 298, he is entitled to that $41 million in excess profits.

When I leave here this morning, Mr. Chairman, I'm going to the Federal Energy Regulatory Commission to file our objection, protest and answer to that motion to strike. That's the current status of Rhode Island in that litigation.

Thank you.

[The prepared statement of Mr. Roberts follows:]

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Attorney General
72 Pine Street
Providence, R.I. 02903

Dennis J. Roberts II, Attorney General

Testimony of Dennis J. Roberts II,

Attorney General of the State of Rhode Island,

with regard to S. 1069, S. 817 and H.R. 555

presented to the Honorable Members of the

Subcommittee on Energy Regulation of the

Senate Committee on Energy and Natural Resources

in Washington, D.C. on Thursday, April 12, 1984.

Mr. Chairman and Honorable Members of the Subcommittee on Energy Regulation:

My name is Dennis J. Roberts II. I am the Attorney General of the State of Rhode Island, and I would begin my testimony by thanking Senator Murkowski for inviting me to appear before you today to express my views with regard to S. 1069, S. 817, and H.R. 555.

These three pieces of pro-consumer legislation, which would greatly limit the conditions under which utilities regulated by the Federal Energy Regulatory Commission (FERC) can charge consumers for costs associated with physical plant improvements under the Construction Work In Progress (CWIP) concept, have only one significant failing: They do not entirely prohibit CWIP recoveries.

As a public official whose advocacy on behalf of consumer interests in utility rate cases and on other utility issues dates back to 1966, I see no valid reason to allow a public utility to recover the cost of a new plant under construction from its ratepayers until the new plant is in service and providing tangible and needed benefits to the ratepayers.

As an absolutist adherent to the "used and useful" theory which recognizes the fact that it is the responsibility of the public utility, not the ratepayer, to undertake and finance the physical improvements needed to fulfill the utility's responsibility to provide adequate service at reasonable cost, I see no need for the exceptions to the ban on CWIP recoveries set forth in the legislation before the Subcommittee.

With regard to the proposals to allow CWIP recoveries with regard to the "costs of any pollution-control facility" and the "costs of conversion of oil or natural gas-fired facilities to the use of fuels other than oil or natural gas", I would argue that it should not be the responsibility of ratepayers to finance capital expenditures which constitute both prudent business practice and the fulfilling of a regulated utility's responsibility to provide service at the lowest possible cost. With specific regard to pollution-control expenditures, meeting Clean Air Act standards (which need to be toughened and enforced by the Environmental Protection Agency to combat the "acid rain" problem plaguing the northeastern United States and neighboring Canadian provinces) and meeting the requirements of other anti-pollution laws is part of the cost of doing business in the electricity industry. As such, financing these expenditures clearly is the responsibility of the utility and its investors, not the ratepayer.

With regard to the proposal to allow CWIP recoveries for all capital expenditures by a utility "in severe financial difficulty", I would argue that mechanisms are already available under both federal and state regulatory law to allow emergency rate relief to public utilities facing insolvency. I believe emergency rate relief should only be granted after an exhaustive review of a utility's total financial conditional, and that emergency rate relief should not be available through the limited review of economic issues that would result from a CWIP filing at the FERC.

I would like to expand somewhat on the reasons I strongly oppose CWIP recoveries before providing specific examples of what the Federal Energy Regulatory Commission's CWIP rulemaking which became effective last July 1st has meant to ratepayers in the State of Rhode Island -- and to the New England Electric System, among other utility holding companies.

Under both federal and state regulatory law, investors in public utilities are virtually guaranteed a fair, if not generous, rate of return on their investments. To argue in favor of the CWIP concept is to argue that in addition to paying a fair rate of return to a utility's investors, ratepayers should also provide some of the working capital needed to fulfill the service obligations for which the investors are earning their rate of return, and should help finance expenditures which will increase the values of the investors' ownership interests. Those who embrace the concept that "there is no such thing as a free lunch" haven't looked at CWIP from the utility investor's viewpoint.

The utility industry's vigorous support of the CWIP concept in recent years makes much more sense when viewed in the context of changing times and enlightened self-interest than it does when viewed as an objective and arguably progressive ratemaking theory.

The CWIP movement, which won a tremendous victory for utilities last year when the FERC enacted Rule 298, reflects an industry-wide effort to find the road back to the good old days of steadily increasing profits with little risk to investors which began with the end of World War II and ended with the OPEC oil embargo and the industry's subsequent inability to forecast and respond to nationwide energy conservation efforts which logically accompanied rapidly rising energy costs.

As noted in the Report on H.R. 555, "According to the Library of Congress, since 1975 about 112,000 megawatts of planned conventional steam turbine and nuclear generating capacity have been cancelled" throughout the United States. The Congressional Research Service reports that between 1975 and 1981 thirty fossil-fuel generating stations and sixty-nine nuclear generating stations were cancelled.

New plant cancellations of that magnitude cannot be said to reflect only a slow reaction by utility management to the drastically changed set of circumstances within the electricity industry occasioned by OPEC and the public response to rapidly increasing energy costs. Plant cancellations of that magnitude reflect serious judgmental errors by an industry which with little creative effort had enjoyed steadily increasing profits during the 1950's and 1960's as a result of steady growth in the demand for electricity, a plentiful supply of cheap petroleum, little public or governmental concern for air quality standards, and economies of scale realized through construction of more modern generating facilities financed largely with the cash reserves flowing into the corporate coffers.

Faced with erroneous forecasts as to the need for costly new generating facilities, tremendous cost overruns in the construction of nuclear-powered facilities, and the continuing necessity of abandoning many construction projects in mid-stream after tens of millions or even hundreds of millions of dollars have been expended, the electricity industry has seized upon CWIP as a way to cut its losses and to avoid thorough regulatory review of the prudence of many of its plant expansion decisions.

The industry would certainly prefer the automatic pass-through of construction costs possible under the FERC's CWIP rulemaking to the more enlightened and more progressive approach to plant cancellation issues being undertaken by some state regulators. The New York State Public Service Commission, for example, has placed the entire sum borrowed for construction of a cancelled generating station in an amortized account to be paid by the ratepayer if the utility has demonstrated prudence. According to the Congressional Research Service, "this policy permits the company to recover its costs but without paying a return to the shareholder. Where imprudence or negligence on the part of the company can be proved, the New York State Commission has denied companies even the recovery of their costs. Illinois and Pennsylvania have essentially pursued the same policies in recent cases."

It is unfortuante that the Federal Energy Regulatory Commission has, rather than adopt a similar regulatory philosophy which reflects its responsibility to safeguard the public interest, chosen to adopt a CWIP rule through which electric utilities are able to avoid meaningful prudence reviews which can lead to denial of recovery from ratepayers of some or all the costs associated with failed plant expansion projects.

Rather than providing good reason to endorse the CWIP concept, the current state of affairs with the electricity industry underscores the wisdom of the long-established regulatory principle that ratepayers should not pay the cost of new plant until it is "used and useful".

To quote from the Congressional Research Service's June, 1982 report entitled Construction Work in Progress in Electric Rate Base:

"The principle that ratepayers should not pay for electric plants until they become used and useful is probably the oldest and most fundamental principle of utility regulation. Violation of the principle has long been considered "intergenerational inequity," which means requiring one generation to pay for electricity capacity the next generation will use. Regulatory commissions have traditionally applied the principle of used and useful by admitting costs of construction into the rate base (where they earn a rate of return) only when a plant goes into service. Until that time, costs of construction and interest paid on debt to finance construction are customarily credited among the company's assets in an Allowance for Funds Used During Construction (AFUDC) account. However, the AFUDC account is a paper asset only. Revenues are not collected on these sums until they enter the rate base after the plant goes into service."

The report continues, ". . . Some analysts argue that, under circumstances in which power companies must invest four times more capital to build a plant (than they had to invest fifteen years ago) before revenue from the plant begins to replace cash outflow, paying an additional dividend without raising rates substantially is impossible. These analysts conclude, therefore, that adhering to the principle of used and useful is outmoded.

"But demand growth for electric power is not accelerating at its historic rate, a fact which might diminish the need for additional plants . . .

"The issue of whether ratepayers should begin to pay for plants before they are completed has taken on an additional dimension in view of the recent rash of plant cancellations. Between 1975 and 1981, 99 new electric plants either planned or under construction were cancelled. The reasons given for cancellation were reduced demand projections and/or cost escalation by a combination of inflation, construction problems, rising interest rates and licensing delays. Therefore, in evaluating the present relevance of the principle of used and useful, its application in the case of plant cancellations should be considered."

I submit, as I noted earlier, that a return to an absolute "used and useful" ratemaking philosophy by the FERC and state regulators is necessary not only to provide an opportunity to review the prudence of failed utility construction programs, but also to ensure that utility investors are earning the fair rate of return on investment to which they are entitled in the absence of mismanagement.

Additional problems posed by CWIP recoveries include immediate rate increases without any guarantee that electricity rates will be lower in the long-term than they would be under an AFUDC/used and useful pass-through of plant construction costs; encouragement of a lack of discipline on the part of utility planners due to the independence from capital market pressures, which can lead to the construction of unneeded new plant; and the possibility that a retail utility which is also an investor in a new generating facility can end up paying twice for that facility, first through its contribution of capital to the project and then by paying part of his "partner's" cost of construction through CWIP.

Having addressed the CWIP issue on the theoretical level, let me now explain what the FERC's CWIP rule which was approved March 10, 1983, issued on May 5, 1983 and became effective on July 1, 1983 can mean to electricity consumers in a state like Rhode Island.

The dates surrounding the adoption and enactment of Commission Order 298 have a particular significance to me, for just prior to the adoption of the rule on March 10th I had entered into a settlement agreement with the New England Power Company, the generation and transmission subsidiary of the New England Electric System holding company.

Rhode Island is unique in the Nation in that better than two-thirds of the retail electricity rates charged by the three major retailers in my State, all of which purchase their power from two FERC-regulated holding companies, are effectively set by the Federal Energy Regulatory Commission.

Under the terms of the settlement agreement I filed with the FERC on March 4, 1983, the New England Power Company agreed that a $30.2 million rate hike would provide it with a sufficient rate of return on investment. It had filed for an annual rate increase of $49.2 million.

Six days later, the FERC adopted the CWIP rule under which utilities can recover up to fifty percent of the cost of plant under construction. The rule became effective on July 1, 1983.

On July 29, 1983, the New England Power Company -- which four months earlier had agreed that a $30.2 million rate increase would satisfy its revenue requirements -- filed with the FERC a request for another rate hike of $74 million per year. Of that total, $51 million was sought under the provisions of the FERC's CWIP rule.

If it is the intention of Congress to make CWIP recoveries possible in order to maintain the financial viability of certain electric utilities, I would respectfully caution that the FERC's view of appropriate CWIP recoveries is far more liberal, as evidenced by the fact that the New England Electric System, one of the most profitable utility holding companies in the United States, can not only apply for CWIP rate relief, but can expect to receive it under the terms of FERC Order 298.

To quote from Chairman of the Board Guy W. Nichol's message to New England Electric System stockholders as set forth in the corporation's annual report for 1983:

"Dear Shareholder:

"1983 was a good year for New England Electric with earnings per average share at a record $5.48. The System's average annual earnings growth rate is 11 percent for the past five years.

"In February, the Directors of your System increased the quarterly dividend from 75 to 80 cents per share. In November, they increased the dividend again to 85 cents per share, the eighth increase in the past five years. Dividends declared in 1983 represent a payout of 59 percent of earnings. . ."

The Federal Energy Regulatory Commission has, under its CWIP rulemaking, made it possible for a utility which can afford to distribute 59 percent of its earnings to stockholders to raise capital for plant expansion through CWIP charges to its ratepayers.

For the New England Electric System, CWIP is nothing more nor nothing less than a windfall.

Since its $74 million rate filing with the FERC last July 29th, the New England Power Company has admitted, in the form of a settlement agreement, that the non-CWIP portion of its rate filing is totally unjustified. And even with regard to its CWIP claim, which I will be personally trying before the FERC in the near future, New England Power has reduced the amount of its claim to about $41 million.

In the meantime, the New England Electric System's Rhode Island retail subsidiary, the Narragansett Electric Company, has so much unused generating capacity that it has convinced the Rhode Island Public Utilities Commission to allow it to offer discounts to large industrial users newly locating in our State and to existing industrial customers who increase their usage significantly. This blantantly discriminatory pricing plan, which I am currently challenging before the Rhode Island Supreme Court, is being offered at the very same time that Narragansett Electric's parent and wholesale supplier is asking the FERC to allow it to charge ratepayers for the cost of plant expansion.

In other words, one of the most profitable utility holding companies in the Nation; one which is able to boast to its investors that it has increased dividends eight times in five years and is so profitable that it can afford to return 59 percent of its earnings to stockholders; and one which is able to convince Rhode Island regulators that it has so much unused generating capacity that it must offer discounts in order to encourage increased electricity consumption; is able at the same time to demand, and quite possibly receive, $41 million in windfall profits under the CWIP philosophy as enunciated by the FERC.

And in the tiny state of Rhode Island, the New England Electric System is not the only holding company seeking to utilize the CWIP philosophy to line the pockets of its shareholders.

Eastern Utilities Associates, the holding company which supplies Rhode Island's two other major electricity retailers, one of which is a subsidiary and the other of which is an independent company, is also seeking a significant rate hike before the FERC under the terms of the CWIP rulemaking. Eastern Utilities' generating subsidiary, Montaup Electric Company, is seeking to recover from ratepayers its investment in the abandoned Pilgrim II nuclear generating station located in the State of New Hampshire.

In fact, according to one estimate the CWIP claims currently pending before the FERC filed by New England Electric System and Eastern Utilities Associates constitute nearly two-thirds of all CWIP sought nationwide under the provisions of FERC Order 298.

Having personally periodically reviewed the financial standing of these two holding companies since 1966, I can assure the Subcommittee that neither need nor deserve CWIP recoveries.

To the extent that the legislation pending before the Subcommittee on Energy Regulation would repeal the FERC rulemaking contained in Order 298, I strongly support the legislation. I would, however, urge the Subcommittee to amend the legislation to totally eliminate CWIP recoveries under all circumstances.

Utilities in dire financial straits can receive needed emergency relief without the proposed exception to the ban on CWIP rate relief, and they can receive that relief in a manner which ensures thorough review of a utility's overall financial condition and ensures that the public interest will be adequately protected.

While efforts to promote conversion to less-expensive forms of electricity generation and to promote the installation of pollution-control devices are laudatory, ratepayers should not be asked to assume these costs of doing business in the electricity industry. Investors are being guaranteed a fair rate of return in exchange for assuming the cost of doing business, and they should earn that fair rate of return.

With reasonable management prudence and reasonable foresight, owning and operating a regulated public utility is as close as you can come to a sure thing under our economic system. To argue in support of the CWIP philosophy is to argue that utility investors should not only be entitled to a sure thing, they also should be allowed to require their ratepayers to provide them with the capital needed to fulfill their obligations as investors. It is a ridiculous concept, and one I would urge the Subcommittee to reject by prohibiting CWIP recoveries under all circumstances.

Thank you for this opportunity to present my views.

Respectfully submitted,
Dennis J. Roberts II
Attorney General, State of Rhode Island

Senator MURKOWSKI. Thank you very much, Mr. Roberts.

The next witness is the Hon. Mary Kilmarx, Commissioner of Public Utilities Commission from the State of Rhode Island.

We wish you a good morning, and ask that you proceed with your testimony.

STATEMENT OF MARY N. KILMARX, COMMISSIONER, PUBLIC UTILITIES COMMISSION, STATE OF RHODE ISLAND

Ms. KILMARX. Good morning.

Thank you very much, Mr. Chairman. I appreciate the opportunity to present testimony to you today on this very vital subject of Funding for Construction Work In Progress, and to indicate the support of the Rhode Island Public Utilities Commission for S. 1069, introduced by our own Senators Chafee and Pell, whom we commend for outstanding leadership on this issue.

Because Rhode Island purchases about 75 to 80 percent of its electricity on a wholesale basis, Rhode Island's ratepayers are very much affected by the current rule relating to CWIP of the Federal Energy Regulatory Commission.

Hence, the Rhode Island Commission is particularly sensitive to this problem. However, since the FERC's actions often set the tone for State regulation, we feel that the bill is important even for other States which do not purchase power wholesale to any great extent.

To us, any blanket allowance of financing costs of plant under construction in rate base is flatly contradictory to the most basic precept of ratesetting; that is, that plant must be used and useful before a customer pays for it.

It is especially important in these days of exceedingly expensive capital projects.

Utilities need to encourage not to build, because construction of generating plants now inevitably raises rates.

Federal actions which make it easier for utilities to add generation rather than figuring out ways to manage loads, search for alternatives and reduce consumption mitigate against the proconservation energy policies which this country has pursued for years.

Actions which could lead to unconsidered growth also run counter to the current administration's reliance on the free market as the chief determinant of energy policy by subsidizing construction and allowing cost recovery from ratepayers who are not benefiting from the product for which they are paying. CWIP financing distorts the regulatory process and frustrates proper cost allocation.

As others have commented, absent congressional action, the current FERC rule sends a false signal by rewarding utility behavior which State regulators, energy offices, attorneys general, and other consumer advocates are working hard to discourage.

Consumers are suffering from an excess of generating capacity, not a shortage, in most areas, including ours.

They should not be placed in a position of loaning money to utilities to build more plants, without careful review by a regulatory body to ensure that those facilities are actually in the consumer's best interest and that there are not other ways to pay for them which do not involve consumer dollars.

Utilities, like every other business in the world, should, except under extraordinary circumstances, finance construction projects through investor contributions, where the risks and rewards can be properly attributed.

The proposed law allows for these circumstances. It does not block CWIP, but simply ensures that the appropriate agency, the FERC, will evaluate the need for and cost effectiveness of the proposed project as well as the utility's financial situation to ascertain whether or not inclusion of CWIP in rate base is truly imperative.

As we certainly have learned in this country in recent years, large central station powerplants, expecially nuclear plants, may well be the most costly alternatives in electrical generation.

CWIP based rates obscure the clean, clear principles of economic efficiency by giving construction projects a subsidy which other options lack.

The case-by-case approach which S. 1069 espouses is clearly the sensible way to deal with this issue.

Rhode Island Commission Chairman Ed Burke could not be here today, but I cannot conclude without adding a word on a related subject dear to his heart, regional regulation.

The FERC ruling on CWIP which has necessitated this legislation is yet another example of a Federal regulatory action affecting New England utilities where we think regional regulation would be more approriate.

The National Governors Association, and the Nation's regulators' organization, NARUC, unanimously agree.

I want to warm you up to consideration at a later time of legislation that would transfer jurisdiction on wholesale interstate electric rates from the FERC to the regions when they request it.

For today, however, I respectfully request your favorable consideration of S. 1069, and thank you again for the opportunity to testify.

[The prepared full statement of Ms. Kilmarx follows:]

TESTIMONY OF

COMMISSIONER MARY N. KILMARX

RHODE ISLAND PUBLIC UTILITIES COMMISSION

BEFORE THE

SENATE SUBCOMMITTEE ON ENERGY REGULATION

APRIL 12, 1984

Thank you very much for allowing me to present testimony to you today on the very vital subject of funding for Construction Work in Progress and to indicate the support of the Rhode Island Public Utilities Commission for S1069, introduced by our own Senators Chafee and Pell, who we commend for outstanding leadership on this issue.

Because Rhode Island purchases about 75% of its electricity on a wholesale basis, Rhode Island ratepayers are very much affected by the current rule relating to CWIP of the Federal Energy Regulatory Commission. Hence the Rhode Island Commission is particularly sensitive to the problem. However, since the FERC's actions often set the tone for state regulation, we feel that the bill is important even for other states which do not purchase power wholesale to any great extent.

To us, any blanket allowance of financing costs of plant under construction in rate base is flatly contradictory to the most basic precept of ratesetting--that is that plant be "used and useful" before a customer pays for it. It is especially important in these days of exceedingly expensive capital projects. Utilities need encouragement not to build, because construction of generating plants now inevitably raises rates. Federal actions which make it easier for utilities to add generation rather than figuring out ways to manage loads, search for alternatives and reduce consumption mitigate against the pro-conservation energy policies which this country has pursued for years. Actions which could lead to unconsidered growth also run counter to the current administration's reliance on the free market as the chief determinant of energy policy by subsidizing construction and allowing cost recovery from ratepayers who are not benefitting from the product for which they are paying. CWIP financing distorts the regulatory process and frustrates proper cost allocation.

As others have commented, absent Congressional action, the current FERC rule sends a false signal, by rewarding utility behavior which state regulators, energy offices, attorneys general and other consumer advocates are working hard to discourage. Consumers are suffering from an excess of generating capacity, not a shortage, in most areas, including ours. They should not be placed in a position of loaning money to utilities to build more plants, without careful review by a regulatory body to ensure that those facilities are actually in the consumer's best interests and that there are not other ways to pay for them which do not involve consumer dollars. Utilities, like every other business in the world, should, except under extraordinary circumstances, finance construction projects through investor contributions, where the risks and rewards can be properly attributed. The proposed law allows for these circumstances; it does not block CWIP, but simply ensures that the appropriate agency, the FERC, will evaluate the need for and cost effectiveness of the proposed project as well as the utility's financial situation to ascertain whether or not inclusion of CWIP in rate base is truly imperative.

As we certainly have learned in this country in recent years, large central station power plants, especially nuclear plants, may well be the most costly alternatives in electrical generation. CWIP based rates obscure the clean, clear principles of economic efficiency by giving construction projects a subsidy which other options lack. The case-by-case approach which S1069 espouses is clearly the sensible way to deal with this issue.

Rhode Island Commission Chairman Ed Burke could not be here today, but I cannot conclude without adding a word on a related subject dear to his heart - regional regulation. The FERC ruling on CWIP which has necessitated this legislation is yet another example of a federal regulatory action affecting New England utilities where we think regional regulation would be more appropriate. The National Governors' Association and the nation's regulators' organization, NARUC, unanimously agree. I want to warm you up to consideration at a later time of legislation that would transfer jurisdiction on wholesale interstate electric rates from the FERC to the regions when they request it.

For today, however, I respectfully request your favorable consideration of S1069, and I thank you again for the opportunity to testify.

Senator Murkowski. Thank you very much. We appreciate your very direct statement. Your entire writers statement will be submitted into the record.

Ms. Kilmarx. Thank you.

Senator Murkowski. I assume that you each had an opportunity to observe the charts that were presented by the previous panel, or you have some familiarity with what those charts or what conclusion those charts to show.

Mr. Roberts. I'm afraid we arrived just as the chairman was finishing his explanation from the chart. But my understanding of it, Mr. Chairman, is that he was attempting to show that the impact of Order No. 298 was to lower rather than raise the ultimate cost.

Senator Murkowski. Over the term everything else being equal.

That being the case, do you agree or disagree with the conclusion that everything being equal, CWIP would lower cost to consumers?

Mr. Roberts. I would disagree with that conclusion for a number of reasons.

Senator Murkowski. Would you care to explain your disagreement?

Mr. Roberts. Yes, sir.

Senato Murkowski. We're going to submit the charts to you at this time.

Ms. Kilmarx. Thank you.

Mr. Roberts. All of the things—I guess the generic answer is that all of the things are never equal——

Ms. Kilmarx. Never equal.

Sen. Murkowski. Well, could you begin to identify those that are not equal. Under the old system three were three situations where, if the eventuality occurred, CWIP would become applicable. So there was a case where, all things being equal, there was an application of CWIP.

They have presented here a series of charts, and I'm interested in if it went the way it's suggested, would the consumer not receive more consideration on lower costs than the other application, which is to put it on the front-end once it comes online and load those costs up front?

Mr. Roberts. Mr. Chairman, I must say this. I have practiced before the FERC and the FPC since 1966, and the State commissions as well. I heard you before make reference to three exceptions under the old rule.

Quite frankly, I am not—maybe we're using these in a different concept——

Senator Murkowski. Pollution control, fuels conversion, and financial hardship.

Mr. Roberts. Oh, that's been a very interim—if that is what we're calling the old rule, that's been a very interim rule.

The old rule, as I refer to it is used and useful. If it's used and useful it's in rate base. If it's not used and useful it's not.

Those three exceptions, it seems to me, are still things where the old rule—for example——

Senator Murkowski. That there is an application for CWIP under those three conditions?

Mr. Roberts. No.

Senator Murkowski. You do not?

Mr. **Roberts**. No; I do not. I don't believe in CWIP on the——

Senator **Murkowski**. Under any circumstances?

Mr. **Roberts**. No; I don't believe——

Senator **Murkowski**. You don't believe CWIP even under ideal circumstances as proposed will result in less cost to the ratepayer?

Mr. **Roberts**. No; no, it will not.

Senator **Murkowski**. Would you explain that?

Mr. **Roberts**. Yes; I think the most obvious change in circumstances which can occur and is currently occurring is the rapid abandonment of both conventional and nuclear electric utility plant by utilities.

Senator **Murkowski**. But these charts don't take into account that exposure.

I'm asking you specifics on the charts.

Mr. **Roberts**. I got ya.

Senator **Murkowski**. They submit a diagram, they show the differential. Would you agree that if the exposure doesn't exist that the costs are less to the consumer?

Mr. **Roberts**. You are asking me to accept a conceptual model, which I do not accept, Senator.

Senator **Murkowski**. You don't accept any conceptual models at any time under any circumstances?

Mr. **Roberts**. I don't accept this conceptual model as being an accurate reflection of how utility regulation works.

Senator **Murkowski**. Well, we can argue that everything is done in degrees. I don't think there's any point in pursing this particular line of questioning because you either do or do not agree with the premise which the charts were proposed which is under an ideal situation where you don't have the risk of noncompletion.

Mr. **Roberts**. Well, if you will take that as a given, Mr. Chairman.

Senator **Murkowski**. Well, of course.

Mr. **Roberts**. Well, I don't take it as a given, because that's not the way the industry operates.

Senator **Murkowski**. The industry can operate under ideal conditions, if that set of facts occurs. And my question is, if that set of facts are applicable and they occur, do you believe that CWIP is in the best interest of the ratepayers as being cheaper?

Mr. **Roberts**. Yes; if black were white; if black were white, Mr. Chairman.

Senator **Murkowski**. Well, sometimes it is.

Mr. **Roberts**. Well——

Ms. **Kilmarx**. I'd like to add a comment a little bit different.

I think under the kind of ideal circumstance which is portrayed in these charts, if you don't borrow money, but take money from somebody else and use it instead of borrowing it, I suppose a case could be made for the fact that it costs you less money in the end.

You have there an intergenerational problem though which regulators feel very strongly about. You are asking people who are buying electricity now to pay costs for something from which they are deriving no benefit, and that is an extremely important consideration here which regulators pay a lot of attention to.

Senator **Murkowski**. That's very true. But we're talking about theory here and the application of cost at any given point is dependent on a number of factors. And if you level out the cost and ultimately reduce the cost, you have to ask yourself, "Is that in the best interest of the consumer"?

Ms. KILMARX. Why don't you ask consumers if they would rather have their—one could ask consumers, would you rather have your electric rates raised now or later. I believe the answer that you would unanimously get from consumers is that they do not wish to pay ahead of time.

Senator MURKOWSKI. "They don't want to pay at all," is the answer of the consumer. We both know that.

Tell me, in your testimony, Commissioner Kilmarx, you inferred that it would be beneficial if you had a regional authority. And I can certainly concur with that because it would give you an opportunity to interact directly with those in your region.

At this stage of development of New England electrical power I assume that it's not feasible for you, within the State of Rhode Island, to encourage an atmosphere that would give you more self-sufficiency, or more independence from outside your State by encouraging a set of circumstances whereby industry or a utility company would be formed to provide power to be generated within the State of Rhode Island, as opposed to having to bring it in from outside.

Is there a reason that you can't create an environment that will create production within the State?

Ms. KILMARX. Yes, there is. Rhode Islanders are regionalists. We have to be, because we're so small. But to build——

Senator MURKOWSKI. Well, you're small in area.

Ms. KILMARX. But because of the existence of an excess of capacity within the region, plus the opportunities for purchasing hydroelectric power from Canada at a much lower cost than we could build plants within the region, let alone within Rhode Island, it would be very much to the detriment of the ratepayer for us to begin to build a new plant at this point which would be exceedingly expensive when there is excess capacity.

Senator MURKOWSKI. So as a consequence, you don't have to concern yourselves, nor do your consumers for the most part, have to concern themselves with the exposure if you tried to develop your own generating facility. The other alternative is to accept the exposure associated with power generated from outside your State, which involves, of course, FERC being the regulatory agency.

Ms. KILMARX. Yes.

Senator MURKOWSKI. You have some distinct advantages and some distinct cost-savings as opposed to going into the market today and trying to generate that energy. And I certainly agree with you.

You use the word subsidy in your testimony, and I found that a little unusual. I wonder if you could explain the specifics of how you feel your ratepayers are involved in a subsidy?

Ms. KILMARX. Well, what I implied in the testimony is that CWIP, in a sense, gives a leg-up to a utility that is planning a large construction plant, by providing that up-front money to the utility so that they don't have to borrow it, and that that advantage gives that option a head-start.

Senator MURKOWSKI. Well, can't that be offset by a reduction to what ordinarly would be passed on to the ratepayers if the cost of borrowing was included? So, isn't it a push basically?

Ms. KILMARX. No, I don't think so. Again, I think you're speaking to these charts. And in the most simplistic terms, if somebody gives you some money so that you don't have to borrow it, I suppose you can construct a model that will show you that the cost of the project is less in the end.

Senator MURKOWSKI. Sure.

Ms. KILMARX. What I meant by that comment was that other options which the utility might undertake other than building a large construction project, in a sense, are pushed down, or do not receive the same starting-gate position through the existence of CWIP, which makes it far easier for the utility to undertake a large construction project. And we like the language of the legislation which requires the utility to show that that option is indeed a necessary option for its ratepayers.

Senator MURKOWSKI. Do you feel there's any exposure under the current application without CWIP that after a facility comes on line and you have the initial rate shock and the utility is continually concerned about his return on investments, that even though the rate structure are under Federal review and authority you are more likely to have less control over the utility's interest in increasing its return on investment than you would under CWIP, where you have the gradual increase starting from when the project is authorized which results in a lower rate base over the life of the project?

It would seem to me from a management point of view that there would be a more likelihood to make a better case for increasing rate structures by the utility management group with the existing application than under the projected application under CWIP.

Ms. KILMARX. I guess if I understand your question, you're saying that if you kind of sneak it in a little bit as you go along then——

Senator MURKOWSKI. If you've got it high already, and that's without the application of CWIP. You've got the rate shock, you throw it on and the rates go up, and then they gradually decline as opposed to CWIP which is a more gradual increase.

Ms. KILMARX. Actually, I would submit that the new evidence regarding large nuclear powerplants is that that rate doesn't have that—may not be having that declining affect.

But again, I simply would submit again that if you ask a ratepayer—or if you want to be fair, present ratepayers vis-a-vis future ratepayers, who are gaining the advantage of the plant, that the principle of used and useful—and I have not heard anything today, or read anything, or seen anything that makes me feel that that ancient principle is not the better way to do it. And if the rate shock is enormous, which indeed it will be, for example with the Seabrook plant, if it ever comes on line—maybe that tells us something about the disadvantages of building large central power, nuclear powerplants in this day of large construction costs.

Senator MURKOWSKI. Well, what's the alternative if we don't build large nuclear powerplants?

Ms. **Kilmarx**. Well for example, in New England and in the rest of the most of the country where we have excess generating capacity, the alternative is not to build them at all, and to turn to such techniques as load management.

Senator **Murkowski**. Buy it from Canada?

Ms. **Kilmarx**. That is certainly an option.

Senator **Murkowski**. Well, what other option is there?

Ms. **Kilmarx**. Well, there are lots of other options. Building smaller plants, for example, that are easier to site and that——

Senator **Murkowski**. What kind of plants?

Ms. **Kilmarx**. Coal. Smaller nuclear plants, hydroelectricity, of course is the cheapest form.

Senator **Murkowski**. The problem is, you know, how many sites have you got left in the Northeast Corridor. You've got low-head hydro and very little——

Ms. **Kilmarx**. That's why we like the James Bay hydro—I think what your question is getting to is, is it impossible without CWIP for utilities to be able to build the kind of generating capacity that the country will need in the future.

I would strongly submit that it is, and that the risks and rewards of that kind of investment should be borne by shareholders, not ratepayers.

Senator **Murkowski**. Well, that's true. But you are a unquie State, and might say that you have the best of both worlds because you don't have to put up with the associated fall-out, so to speak, of power generation within your State. And that's just a set of circumstances that exist. So you're dependent on buying power from other States nearby, but those States have to put up with whatever environmental impact or whatever negative affects that are associated with power generation.

So, you know, that's the uniqueness of the circumstances which you are in.

But on the other hand, you have indicated that you are concerned about the cost of this. What is your estimate of the impact of FERC's CWIP rule on Rhode Island electric customers per kilowatt?

Ms. **Kilmarx**. I think Attorney General Roberts has the figures for the two current cases which are before is, and it's——

Mr. **Roberts**. The total, Mr. Chairman, for the two companies is $52.7 million, with the Rhode Island impact totaling $14.5 million.

Ms. **Kilmarx**. That's about $50 a person in Rhode Island, man, woman and child.

Mr. **Roberts**. That breaks down by companies. The New England Power Co. filing is at $41 million, with a $9.7 million annual impact on Narragansett ratepayers, and Montaup in its M-9 filing has an $11.7 million CWIP issue out of the $15 million total filing, by the way, with an impact on Blackstone Valley Electric, Newport and and Pasco ratepayers of $4.8 million.

Senator **Murkowski**. And if Seabrook went on, that would be much less. Is that right?

Mr. **Roberts**. Be much less?

Senator **Murkowski**. Well, that portion.

Ms. **Kilmarx**. We are fortunate that the Rhode Island utilities' exposure in Seabrook is fairly small, and the rate shock in Rhode

Island there will not be nearly as large as it will be in the other New England States where it will be horrendous.

Mr. **Roberts**. May I make a factual qualification on the record, Mr. Chairman.

There's been reference made to the purchase of Rhode Island's power coming from out of State. The way that's been used, I think, infers that there's no power generated in Rhode Island.

Senator **Murkowski**. Four-fifths, I think, was the figure used by previous witnesses as to what was basically transmitted into the State of Rhode Island.

Mr. **Roberts**. Yes. We are a net importer, but we buy 100 percent of our power from out of State in the sense--well, 99 percent of it, 1 percent on Block Island of it, from Montaup and New England Power Co., some portion of that mix is generated in the State.

Senator **Murkowski**. I understand that.

Mr. **Roberts**. Very good.

Ms. **Kilmarx**. We have a couple of powerplants. I think that one of the things I tried to say in my testimony that I think is important is that this is not simply a piece of parochial legislation, designed to, you know, create a national solution for what is essentially a local problem. And I think that the important point is that the electric utility industry does not need CWIP generally, and that is why we commend this legislation to you.

Senator **Murkowski**. Your $50 figure per person, man, woman and child, was per what?

Ms. **Kilmarx**. $50 million divided by 1 million people.

Senator **Murkowski**. Per?

Ms. **Kilmarx**. Sorry. We've got to scratch that figure, because the figure that Attorney General Roberts used was the figure that applied to the entire wholesale rate; of that the impact in Rhode Island is only with our retail affiliates of those companies, and that total impact is $14.5 million. I'm sorry, I didn't mean to——

Senator **Murkowski**. $14.5 million. So that would equate substantially less than $50 per person, man, woman and child. And that was per what, per year?

Mr. **Roberts**. Yes.

Ms. **Kilmarx**. That is just in the current filings that these companies have before the FERC.

Senator **Murkowski**. That would, of course, be paid in any case. In other words, it's a matter of time to dictate when it would be paid.

Ms. **Kilmarx**. Oh, yes, yes. You're saying when those plants come on line——

Senator **Murkowski**. It's inevitable.

Ms. **Kilmarx** [continuing]. If they do——

Senator **Murkowski**. If they do, you pay it one way or another.

Ms. **Kilmarx**. Yes.

Senator **Murkowski**. So it's not $14 more, it's $14.

Ms. **Kilmarx**. Now.

Senator **Murkowski**. Yes, as opposed to whenever.

Ms. **Kilmarx**. Yes.

Senator **Murkowski**. Which I think is the point of many of the proponents of the CWIP argument, you're going to pay it sooner or later.

Ms. **Kilmarx**. But "you" isn't the same "you" that pays it later.

Senator **Murkowski**. Oh, I understand that. I think early in our——

Ms. **Kilmarx**. That's an important point though.

Senator **Murkowski**. Earlier in our discussion, we came up with the general, categorical generalization of the attitude of ratepayers. They don't want an increase, not now, not tomorrow, and that's understandable.

I think you have been very gracious with your time and your knowledge this morning, and we thank you. I think you've helped substantially in putting together a record on these hearings, and I would dismiss you and wish you a good day.

Ms. **Kilmarx**. Thank you very much.

Mr. **Roberts**. Thank you, Mr. Chairman.

Senator **Murkowski**. I'm sure you will probably get some additional questions. I believe we keep the record open for 2 weeks after this hearing.

Ms. **Kilmarx**. All right.

Senator **Murkowski**. Our next panel is Edison Electric Institute, and our witnesses in order will be Mr. Richard E. Disbrow, president of American Electric Power Co.; Mr. Douglas C. Bauer, senior vice president, Economics and Finance, Edison Electric Institute; and, Mr. Guy W. Nichols, chairman and chief exectutive officer of the New England Electric Power System. And we have heard some reference to New England Power already and we look forward to your enlightened testimony.

Please, Mr. Disbrow, would you proceed.

STATEMENT OF RICHARD E. DISBROW, PRESIDENT, AMERICAN ELECTRIC POWER CO., INC.

Mr. **Disbrow**. Good morning, Mr. Chairman.

I'm Richard E. Disbrow, president of the American Electric Power Co., which is the parent company of the seven-State investor-owned electric utility system, serving over 2½ million customers.

I'm appearing today on behalf of the Edison Electric Institute to discuss the issue of including construction work in progress in electric utility rate base, and to present EEI views on H.R. 555, S. 817, and S. 1069.

These bills would restrict the authority of the Federal Energy Regulatory Commission to set wholesale electric rates which include CWIP in rate base.

Now, EEI agrees with the general view expressed in the pending legislation; that it is, indeed, in the public interest that electric energy service be delivered at the lowest possible cost and with adequate reliability.

However, the restrictions on FERC rule-making authority contained in these legislative proposals will not serve to promote this objective.

Inclusion of CWIP in rate base is a matter of sound regulatory policy which has repeatedly been shown to be in the ratepayers' interest.

Thus, with the limitations imposed on inclusion of CWIP in wholesale electric rate by the pending bills, it will result in higher long-term cost to ratepayers, and will seriously jeopardize the adequacy and reliability of electric power supplies to both present and future utility customers.

For these reasons EEI and its member companies strongly oppose each of the bills pending before the subcommittee. Enactment of any of these proposals will hurt the very customers which the proponents of this legislation seek to protect.

Inclusion of CWIP in rate base benefits ratepayers of all utilities through lower, long-term rates, more efficient pricing, and the assurance of an adequate and reliable electricity supply.

Inclusion of CWIP also contributes significantly—and I might add without increasing the net income of the affected utilities, to the improvement in cash flow and debt interest coverage of the electric utilities.

Inclusion of CWIP also increases utility access to capital markets on reasonable terms, and encourages utilities to develop a least-cost power supply system without bias dictated by financial constraints.

Most important of all, inclusion of CWIP in rate base contributes to the timely construction of the generation and transmission projects needed to ensure the future adequacy and reliability of full power system supply.

As outlined in my prepared testimony, the inclusion of CWIP in rate base benefits ratepayers in three ways.

First, the customer pays lower rates over the life of the plant, and financing costs are recovered on a current basis rather than being capitalized and added to the total cost of the plant.

Second, including CWIP in rate base allows customers to adjust their energy consumption levels on a gradual basis in response to the true cost of providing electric supply, rather than confronting the large and sudden rate increases which have been dubbed rate shock which occur with the addition of new plant for rate base when CWIP has been excluded and financing costs have been capitalized.

Third, inclusion of CWIP in rate base lowers the utility's cost of capital, and these savings directly benefit the utility's ratepayers.

None of those advocating legislation limiting inclusion of CWIP in rate base suggested that utilities be relieved from their legal obligation to provide both present and future customers with and adequate, reliable and affordable supply of electric service.

Nonetheless, each of the bills pending before the committee would have the effect of denying utilities the means to meet their service obligations. These bills would also impose higher overall costs on ratepayers in return for short-term rate benefits.

The FERC rule allowing CWIP in rate base, subject to several very important limitations, is the result of nearly a decade of experience in dealing with this complex rate-making issue, and over 2 years of exhaustive and comprehensive consideration in the rulemaking proceeding in which all parties were invited and, indeed, vigorously participated.

The outcome is a well-reasoned and equitable solution which seeks to carefully balance many competing interests. And most importantly, it already contains several provisions which protect consumer interests.

Thank you, sir.

[The prepared statement of Mr. Disbrow follows:]

STATEMENT OF THE EDISON ELECTRIC INSTITUTE

ON S. 1069, S. 817, H.R. 555

Presented by

RICHARD E. DISBROW

President

American Electric Power Company, Inc.

Before the

SENATE COMMITTEE ON

ENERGY AND NATURAL RESOURCES

Subcommittee on

Energy Regulation

April 12, 1984

I. INTRODUCTION

Mr. Chairman and members of the Subcommittee:

I ~~am Rich~~ard E. Disbrow, President of American Electric Power Company, Inc., (AEP), the parent company of a seven-state investor-owned electric utility system serving over 2.5 million customers. I am appearing today on behalf of the Edison Electric Institute (EEI) to discuss the issue of including Construction Work in Progress (CWIP) in electric utility rate base, and to present EEI views on H.R. 555, S. 817 and S. 1069. These bills would restrict the authority of the Federal Energy Regulatory Commission (FERC) to set wholesale electric rates which include CWIP in rate base.

EEI is the association of the nation's investor-owned utilities. EEI member companies provide electric service to virtually all customers of the investor-owned portion of the industry and to approximately 75 percent of all users of electricity in the United States. I am accompanied by Mr. Peter DeMaria, Treasurer of AEP. It is also my understanding that a number of other EEI member companies have requested an opportunity to present their views on the various legislative proposals pending before the Subcommittee.

EEI agrees with the general view expressed in the pending legislation that it is in the public interest that electric energy service be delivered at the lowest possible cost and with adequate reliability. However, the restrictions on FERC ratemaking authority contained in these legislative proposals will not serve to promote this objective.

Rather, the limitations imposed on inclusion of CWIP in wholesale electric rates will result in higher costs to ratepayers and will seriously jeopardize the adequacy and reliability of electric power supplies to present and future utility customers throughout the country. For these reasons, EEI and its member companies strongly oppose enactment of any of the bills pending before the Subcommittee.

My testimony will address the following points:

(1) Inclusion of CWIP in rate base is sound pro-consumer regulatory policy. It reduces the overall cost of new plant and facilities, eliminates existing bias against selecting the least-cost power supply alternative, mitigates "rate shock" when new plants come into service, and produces clear price signals encouraging greater conservation and more efficient electricity use.

(2) The nation needs a financially strong utility industry capable of constructing the most economic bulk power supply facilities needed to assure an adequate, reliable, and affordable supply of electricity, both today and in the future. The bills pending before the Committee constitute a real threat to the long-term financial viability of the electric utility industry.

(3) The improved cash flow provided by CWIP will be a key factor in the determination of whether many needed generation and transmission facilities already under construction will be completed; and whether utilities will be financially capable of undertaking needed investments to meet future demand.

(4) The recently adopted FERC rule allowing utilities to file wholesale rates, including up to 50 percent CWIP in rate base, is the product of a comprehensive rulemaking proceeding initiated in response to the Commission's recognition of the failure of its prior policy making CWIP inclusion contingent on demonstration of "financial distress". The new FERC rule reflects a fair and equitable balancing of competing interests by the Commission and includes numerous provisions designed to protect the interests of wholesale customers.

(5) The proposed legislation will require additional complex and burdensome regulatory proceedings due to the case-by-case approach to determining the "need" for CWIP inclusion. The outcome will be highly uncertain, even for

those few companies eligible to file for CWIP inclusion under the legislation.

II. Summary of the EEI Position

Underlying the narrow question of including CWIP in rate base is the more fundamental need to assure that this nation maintains a financially strong electric power industry. An adequate, reliable, and affordable supply of electric power has become an essential element of sustained economic growth, maintaining our national security, and assuring the future well being of the American people. Electricity is also our most versatile energy resource which can use virtually all of our indigenous "fuel" supplies: coal, oil, natural gas, hydropower, uranium, geothermal, solar, and a broad range of renewable sources. For all of these reasons, it is imperative that proposed legislation dealing with CWIP or any other ratemaking issue be assessed relative to its long term impact on the financial viability of the industry as well as the short term effect on rates paid by the nation's electric consumers.

EEI's position is that H.R. 555, S. 817 and S. 1069, are directly contrary to the public interest. Further, it is the position of EEI that full (i.e., 100 percent) inclusion of CWIP in rate base is a matter of sound regulatory policy that has been shown to benefit ratepayers of all utilities through lower long-term rates, more efficient pricing and the assurance of an adequate and reliable electricity supply. Full inclusion of CWIP contributes significantly (without an increase in earnings) to improve and maintain the currently inadequate cash flow of investor-owned electric utilities, increase utility access to capital markets on reasonable terms, and allow utilities to select the lowest cost mix of power supply without bias dictated by financial constraints.

Most important of all, inclusion of CWIP in rate base will assure timely construction of the generation and transmission projects needed to ensure the future adequacy and reliability of bulk power supply systems.

It is clear that under the restrictive provisions of the pending legislation, only very minimal amounts of CWIP (other than expenditures for pollution control and the conversion of oil and gas-fired facilities) ever would be included in the rate base of utilities whose sales are subject to the jurisdiction of the FERC. The Commission's prior policy on CWIP, embodied in FPC Order No. 555, incorporated a "financial distress" test that placed a heavy burden of proof on a utility seeking CWIP inclusion. The unworkability of this "financial distress" test was evidenced by the fact that only one utility ever met the burden of proof imposed by the rule even in the face of the industry's recognized financial difficulties during the tenure of the rule. Responsible and effective regulation should seek to avoid financial distress, rather than making the existence of financial distress a precondition for needed relief. In our view, this is one of the fundamental problems with the bills pending before the Subcommittee.

The recent decision by FERC in Order No. 298 to allow inclusion of 50 percent of CWIP in rate base, recognizes the need for a financially strong electric utility industry and the need to eliminate existing disincentives to selecting the lowest cost means of meeting future customer needs. The Commission's rule includes provisions for phasing- in CWIP so that any increases in wholesale rates as a result of CWIP will not exceed 6 percent per year as well as several other provisions designed to protect the interests of wholesale customers. The

Commission's new rule is the culmination of nearly a decade of work seeking an effective and equitable resolution to the CWIP issue. Order No. 298 is based on nearly two years of careful study in a fair and comprehensive rulemaking proceeding, with exhaustive comments received and considered from all sides in the debate. In the end, the Commission was ultimately persuaded that exclusion of CWIP was no longer sound regulatory policy and that a new policy allowing CWIP in rate base was in the public interest.

Each of the pending bills would have the effect of reversing this carefully developed FERC policy decision by adopting misguided assumptions regarding the effects of CWIP that were specifically rejected by the FERC. S. 817 would effectively prohibit CWIP under any circumstances by creating a presumption that rates including CWIP were not "just and reasonable". H.R. 555 and S. 1069 would ostensibly allow some CWIP where "needed" but include other provisions making it unlikely that a utility would ever be given the opportunity to include CWIP in rate base.

We believe that Congress should be particularly reluctant to overturn summarily the decision of an expert federal agency with extensive experience in complex utility ratemaking matters such as CWIP. This is especially true considering that the Commission's rule is still under judicial review wherein many of the same issues addressed in the legislation will also be dealt with by the courts.

It is EEI's view, and my own personal view, that while the FERC decision is an important step in the right direction, it does not go far enough. Throughout the Commission's rule making proceeding we argued that the ratepayer's interests would best be served if 100 percent of CWIP were included in rate base. Indeed, the Commission acknowledged this point in its final rule but went on to note that its final decision reflected a careful balancing of competing interests as to the appropriate level of CWIP inclusion. Contrary to the assertions of those supporting the pending bills, the Commission's rule is a fair and well-reasoned treatment of a highly complex electric ratemaking issue.

As outlined in subsequent portions of my testimony, the inclusion of CWIP in rate base benefits ratepayers in various ways. First, the customer pays lower rates over the life of the plant. Second, the customer pays small increases in rates while the plant is under construction matching the current capital carrying costs actually being incurred and thereby receiving more accurate price signals, rather than a very large increase when the plant goes into service. Third, it assures customers an adequate and affordable supply of electricity by providing utilities with adequate cash-flow and enhanced long-term debt coverage which are a prerequisite to the construction of needed plant.

None of those advocating legislation limiting inclusion of CWIP in rate base suggest that utilities be relieved from their legal obligation to provide both present and future customers with adequate, reliable, and affordable, electric service. Nonetheless, each of the bills pending before the Committee would deny utilities the means to meet their service obligations and would also impose higher costs on ratepayers in return for short-term rate benefits.

III. The Concept of Including CWIP in Rate Base

It is important to clarify exactly what is meant by Construction Work in Progress (CWIP) and how such costs are treated for ratemaking purposes. The costs referred to as "CWIP" include investments by a utility in facilities under construction together with related unrecovered "carrying charges."

Inclusion of CWIP in rate base is a long established method whereby utilities are given an opportunity to recover the carrying charges on the capital which they have used to finance new construction through current rates. This current cash return on amounts of CWIP included in rate base, is authorized by a regulatory commission and is designed to recover the carrying charges only and not any portion of the principal of such expenditures. The latter are recovered through normal depreciation charges only after the facility in question has come into service. Investment capital is still provided through traditional capital markets; ratepayers are only asked to provide the returns required by investors for the use of their funds over the duration of the construction cycle.

The alternative ratemaking treatment for CWIP is to exclude such costs from rate base, thus prohibiting the current recovery of such financing costs. Instead, as a substitute for a current cash return, an Allowance for Funds Used During Construction ("AFUDC") is added to the construction base (i.e., by capitalizing these financing costs) to commence recovery only when the plant comes into service. AFUDC is reflected in the utility's income statement as "other income" or as a "reduction of interest charges" resulting in non-cash earnings. The utility's reported net income is about the same under each approach: the differences relate to when carrying charges are recovered. Current recovery lowers the level of electric rates over the long term, improves the adequacy of cash flow to finance needed construction, improves interest coverages and results in more accurate price signals to consumers regarding the need to use electricity more efficiently.

IV. The Consumer Benefits of Inclusion of CWIP in Rate Base

The arguments on both sides of the CWIP issue are well known to members of the Subcommittee and Staff. Nevertheless, I believe it would be helpful to briefly review why EEI and its member companies support a policy allowing full inclusion of CWIP in rate base, and to respond to those who question both the equity and efficiency of such a regulatory approach.

Including CWIP in rate base has been repeatedly shown to benefit all utility customers in several ways. A utility finances new construction through a combination of internal sources (depreciation and retained earnings) and external sources (debt and equity capital). The carrying charges on externally derived capital, largely current cash costs in the form of interest and dividends, are accounted for in one of two ways:

(1) CWIP can be included in the utility's rate base. Carrying charges may then be recovered through current rates.

(2) Alternatively, the carrying charges can be capitalized (i.e. added to the final cost of the project) in the form of an Allowance For Funds Used During Construction (AFUDC). This procedure provides the utility with no current cash earnings; a point of major concern to potential investors.

It is clear from a variety of studies performed that in the aggregate, ratepayers pay less over the life of a facility if the utility is allowed to earn a current cash return on CWIP. This occurs since under the alternative approach (i.e., capitalizing carrying charges as AFUDC) the value of the rate base is increased due to the compounding effect of new carrying charges to pay for earlier ones and the higher costs of capital to the utility because of the greater risks perceived by investors relating to AFUDC earnings. Thus, the total amount on which a return must be earned over the life of the plant is permanently increased. Allowing the utility to earn a current return on construction costs adds nothing to shareholders' total earnings but merely converts the non-cash AFUDC earnings to an equivalent amount of cash earnings. These cash earnings contribute to enhanced long term debt interest coverages which, in turn, contribute to lower cost financing for the company with commensurate benefits to the customer.

Including CWIP in rate base allows customers to adjust their energy consumption levels on a gradual basis rather than confronting the large and sudden rate increases ("rate shock") which may occur with the addition of new plant to rate base. Excluding CWIP from rate base also results in a substantial "underpricing" electricity below its true costs thereby encouraging "excessive" consumption, leading to further "rate shock" effects.

The difficulties resulting from sudden rate increases are avoided if the carrying charges associated with new plant are gradually included in rate base as they are incurred (rather than in a single lump-sum when the plant finally goes into service). Ratepayers are thus afforded the opportunity of adjusting their consumption to reflect the current cost of providing them with electric power.

V. The Need for a Financially Strong Electric Utility Industry

A fundamental issue in the debate over CWIP is the need for a financially sound electric utility industry and what is needed to assure the industry's future financial viability. Recent declines in the rate of growth of overall energy demand does not translate into a long-term "moratorium" on the need to finance and construct new electric generating and transmission facilities. This view has unfortunately been manifest both in the debate over the ratemaking treatment of CWIP as well as in recent Congressional proposals which seek to eliminate utility dividend reinvestment programs, restrict tax normalization, and several other measures which would further erode the already inadequate cash flow of most investor-owned utilities.

While the U.S. economy is becoming less energy intensive, the substitution of electricity for other fuels, and new industrial applications of electricity are making the U.S. economy considerably more electricity intensive. Electricity's share of total energy consumption increased from 18 percent in 1965 to 35 percent in 1982 and most forecasts project a continuing growth in electricity's share of total energy consumption. Under these circumstances, it is essential that the American people understand both the continuing need for constructing needed electric power facilities and the risks associated with a failure to respond to this need in a timely manner.

Many of our overseas competitors have recognized the trend towards increasing industrial use of electricity and have adopted "electrification" strategies to assure adequate and low cost power supplies as a means of attracting new industrial development and promoting future economic growth.

Recent developments in the U.S., however, suggest that we are adopting an increasingly short-sighted approach to future electric power supply needs. Declining load growth in the 1970's coupled with a short-term "excess" of capacity over peak load in some regions has caused some to argue that further capacity additions are not needed for the foreseeable future. Recent analysis of this issue by the Electric Power Research Institute (representing both the public and private sectors of the industry) disputed this argument and concluded that:

(1) Existing generating capacity is adequate to supply current needs, but provides little room for future economic growth.

(2) Additional generating capacity is needed both to support economic growth, as well as to provide for replacement of obsolete plant and to reduce dependence upon oil and gas.

(3) Whether even planned capacity additions can be realized depends upon the success of today's highly uncertain construction programs. Delays and cancellations result in higher electricity costs and threaten the security of electricity supply under existing utility demand projections.

(4) Today's decisions determine the adequacy of electricity supply for the next decade and beyond. Because of extended lead times, if new nuclear and coal capacity is to be available for the 1990's it must be started now.

Based on the best available information, most utilities expect the demand for electricity to grow at approximately the same rate as GNP. However, if GNP growth increases above that of the 1970's and oil prices continue to remain stable, then electricity demand could increase at a rate in excess of current utility forecasts and the existing level of capacity additions will be barely adequate to meet demand. The principal risk of a sudden surge in electricity demand is the potential inability of the utility industry to select the most economic mix of generating capacity that will enable it to meet demand at the lowest cost. Many studies have shown that the real costs to ratepayers of carrying limited amounts of "excess" capacity are small compared to the costs of a capacity "shortfall" or an uneconomic generation mix which relies heavily on oil-fired combustion turbines.

VI. The Financial Condition of the Electric Utility Industry

The foregoing discussion demonstrates the need for a financially strong electric utility industry to meet the nation's future demand for electric power. The capital requirements of the utility industry are still substantial, notwithstanding the near-term completion of many generating units currently under construction.

EEI's most current estimates indicate that the planned capital expenditures, (including AFUDC) will exceed $120 billion over the next four years. A major portion of this total will have to be generated internally. Attaining the needed level of cash earnings may well be impossible for many investor-owned utilities under current regulatory and market conditions. These same conditions will make it equally difficult to raise needed investment capital from external sources on reasonable terms.

The difficulty with continuing to finance construction and set electric rates in the traditional manner is that financing requirements have multiplied many fold and, generally, have gone beyond the capability of individual utilities. Construction costs of power plants have increased dramatically since the early 1970's as a result of changing regulatory requirements, licensing delays, etc. The cost of raising investment capital, which is as essential an input as steel or concrete, has also risen from a range of 6 to 8 percent in the early 1970's to 12 to 16 percent today. The construction period has been lengthened (due primarily to environmental and other licensing requirements) from 3 to 4 years to 7 to 10 years or longer. Taken together, these factors greatly amplify the magnitude of the task of constructing needed plant. Add to this the current inadequacy of internal cash generation, and the traditional method of financing becomes considerably more difficult, or even impossible. Furthermore, the consumer is still paying yesterday's prices for today's much costlier power supplies and has little indication of the need to adjust consumption levels in response to these changing economic circumstances.

Without CWIP in rate base, it is difficult to imagine how any utility could carry the AFUDC related to the construction of even a moderate size baseload generating plant. Moreover, the rate increase that would be necessary at the time the plant goes into service would be so large that as a practical matter, regulators would have to consider a variety of "phase-in" schemes. As a consequence, recovery of the financing costs that have been capitalized in plant costs over a 10 to 15 year construction cycle are deferred even further. In a sense, the company must defer payment of an "IOU" given investors in the form of AFUDC during the construction cycle, leading to a substantial deterioration in investor confidence and higher costs-of-capital which, in turn, translate into higher costs for the consumer.

Our continued concern with the industry's financial difficulties is based on a realistic assessment of the cylical nature of the economy, uncertain capital markets, and the increasing political pressures on regulatory agencies to limit rate increases.

- Notwithstanding a broad improvement in most sectors of the economy, the 1983 year-end market price to book value ratio stood at 94 percent on average, unchanged from 1982, according to an analysis of 100 major electric utility systems. Under these conditions, any issue of new common equity dilutes the value of outstanding shares and further reduces investor confidence.

- The bond ratings of most electric utilities have been repeatedly reduced over the past decade. Between 1980 and 1983 54 ratings were lowered, while only 30 were upgraded. To date in 1984, there have been 14 downgradings and only 5 upgradings. The industry's precarious financial condition is reflected in this continuing trend to downgrade utility bond ratings. Many utilities are now rated BBB or below. Most institutional investors are precluded from purchasing debt securities rated below A.

- Interest coverage ratios for most utilities is still below levels generally viewed as adequate by investors. The average pretax interest coverage in 1983 (exclusive of AFUDC) was 2.4. Low interest coverage ratios have been a principal factor in the bond downgradings noted above.

- The year-end 1983 AFUDC component of investor-owned electric utility earnings was 52 percent of net income, an all-time high. AFUDC has increased from 12.9 percent of net income in 1969, and has been above 40 percent of net income since 1979. Some electric utility companies are experiencing AFUDC in excess of 100 percent of net income. This deterioration in the quality of earnings, when combined with inadequate returns on equity, inhibits the industry in financing future construction.

There is substantial consensus in the financial and regulatory community that low interest coverage and market-to-book ratios are a direct consequence of inadequate cash earnings, and reflect the increasing non-cash component of net income available to cover interest obligations and return a competitive yield to the equity investor. I once again emphasize that the allowance of a current cash return on construction projects does not increase net earnings. It merely substitutes cash for non-cash AFUDC earnings. Inclusion of CWIP in rate base is an effective and low-cost ratemaking option available to regulators to provide electric utilities with the needed cash flow and enhanced interest coverage to assure access to capital markets on reasonable terms.

VII. The FERC Rule Allowing Partial CWIP in Rate Base

The FERC regulates only those rates applicable to wholesale electricity sales (i.e., sales for resale in interstate commerce) and rates for transmission services. Approximately 10 to 12 percent of investor-owned utility rates and revenues are currently subject to FERC regulation with the much larger percentage of industry revenues subject to state regulation. Municipal and cooperative systems constitute the vast majority of wholesale customers.

In May 1983, the FERC unanimously adopted a new policy on CWIP (Order No. 298) allowing utilities to earn a cash return on up to 50 percent of CWIP, in addition to that already allowed under then existing rules for pollution control and fuels conversion expenditures. The prior FERC policy on CWIP (Order No. 555) was established in 1976 and was very restrictive in terms of what was allowed. Under this policy, CWIP was allowed in rate base only for expenditures on pollution control and fuels conversion plus additional amounts as might be allowed by the Commission in cases of undefined "severe financial distress". The terms of this rule relating to severe "financial distress" were so vague and restrictive as virtually to exclude the possibility of including CWIP in rate base for financial reasons. Notwithstanding the fact that the rule was in effect during a period of unprecedented inflation, high interest rates, and extreme financial difficulty for the utility industry, only one company was ever permitted to collect a return on CWIP (subject to refund) under Order 555. In simple terms, case-by-case determination of "financial distress" was shown to be an ineffective and unworkable policy, leading the Commission to reexamine its policy on CWIP.

In its recently completed rulemaking proceeding which extended over a two year period, the FERC considered the views of over 200 parties representing every perspective on the CWIP issue and received thousands of pages of comments, analyses, and studies, etc., on the merits of alternative policies in this area. We believe that the new policy, articulated by the Commission in Order No. 298, represents a fair and objective examination of the factual and policy issues by an expert agency specifically established by the Congress to adjudicate complex ratemaking matters such as CWIP.

The FERC decision has been incorrectly characterized by wholesale customers as an "abdication" of Commission responsibility. Even a cursory examination of the merits of the issue, however, would indicate that Order No. 298 is a uniquely appropriate solution based on the record compiled by the Commission during the course of this lengthy proceeding. In a Fact Sheet issued by the Commission in conjunction with the new rule, FERC characterized its decision as reflecting "an equitable balance" between industry needs and consumer concerns. The evidence of such a "balancing" effort is clearly demonstrated in the Commission's decision to (1) restrict CWIP inclusion to a maximum of 50 percent (compared to the 100 percent CWIP inclusion advocated largely by the investor-owned utility industry and the financial community), (2) limit annual rate increases attributable to CWIP to 6 percent, (3) restrict the frequency of utility rate filings to include CWIP, and (4) require a utility to demonstrate that any CWIP included in rate base was incurred as part of a "least-cost" strategy, etc. All of these measures were clearly designed to mitigate any potential short-term rate impacts resulting from CWIP and to protect wholesale customers against inclusion of imprudently incurred investment costs.

A number of arguments have been raised by CWIP opponents in support of pending legislative proposals to restrict Commission authority to allow inclusion of CWIP in rate base. As discussed in Appendix A, most of these arguments reflect a misunderstanding of the CWIP concept and how CWIP is treated for ratemaking purposes in the Commission's recently adopted order.

VIII. Comments on the Proposed Legislation

My comments on the proposed legislation deal primarily with H.R. 555 and S. 1069 which are characterized by their proponents as "compromise" proposals which would ostensibly allow CWIP where needed in response to cases of severe financial distress. Since S. 817 would virtually preclude inclusion of CWIP in wholesale rate base under any circumstances, there is not much point in detailing our fundamental opposition to any such proposal.

Under H.R. 555 and S. 1069, FERC would be allowed to include CWIP in rate base only for expenses related to pollution control facilities and conversion of oil or gas-fired facilities to alternate fuels. "Other CWIP" could be included in rate base only, (1) after the utility had complied with a complex set of eligibility and filing requirements and (2) the FERC, after evidentiary hearings, had made a complex series of findings (as set forth in the bill) and issued a final order with respect to the application.

Under H.R. 555, a utility is eligible to file for other CWIP only on the basis of one measure of the overall financial condition of the utility -- a ratio of internally generated funds to construction below 40 percent. The problems with this approach include:

- The measure is vaguely defined and is certain to create controversy in future rate cases and result in protracted litigation. It also precludes many utilities in financial need from even filing to include CWIP in rate base.

- The ratio of internal generation of funds to construction is by no means the only measure, and certainly not the most important measure of financial health for all utilities, including those with large construction programs. Other financial measures such as a company's (pretax) interest coverage ratio, market to book ratio, and quality of earnings are equally important in assessing a utility's overall capacity to finance needed construction.

- The internal generation of funds ratio of 40 percent contained in the bill is substantially below that level needed to assure the financial integrity of the industry. The financial community has consistently maintained that a considerably higher internal funds ratio is needed to assure financial integrity.

- While it is not clear why the 40 percent figure was selected as the maximum threshold for CWIP eligibility, the internal cash flow to construction ratio clearly depends on a number of variables (such as net income and provisions for deferred taxes) that can change dramatically over relatively short periods of time. Thus, the specification of a fixed percentage in the bill could lead to serious limitations on the amount of CWIP that utilities can seek to include in rate base, even in the context of a company encountering severe financial difficulty in completing needed construction.

- Determining a company's eligibility to include CWIP in rate base using a specific percentage for a single financial ratio is poor regulatory policy and may create undesirable

> economic and financial incentives which will bias utility decision making. These might include incentives for "excessive" debt in the capital structure, "excessive" dividend payouts and failure to promote adequate dividend reinvestment.

In addition to the "40 percent" threshold filing criteria, H.R. 555 also contains provisions under which a utility could not even begin to collect rates including CWIP subject to refund unless it could demonstrate "severe financial difficulty" (to be defined by the Commission). H.R. 555 contains the further provision that no CWIP could be included in rate base unless a utility could show that its debt financing costs would be, "significantly higher than the average cost of new long-term debt within the electric utility industry ... taking into account the possibility of innovative financing methods." Both of these provisions are so vague and potentially restrictive as to make it highly unlikely that companies even eligible to file, would ever be allowed to collect rates which reflect "other CWIP."

The filing requirements and determinations which the Commission must make under S. 1069 are equally complex and burdensome. In particular, S. 1069 would require an application to FERC for inclusion of "other CWIP" in rate base to include:

a. A showing that the application will be unable to satisfy its minimum indenture requirements for issuance of additional debt, being thus in "severe financial difficulty" as defined in the bill, unless CWIP is included in rate base.

b. An analysis of the benefits and costs of CWIP inclusion for utility customers.

c. A showing of need for the facility, with a detailed analysis of specified various possible alternative means of meeting the demand at less cost.

d. A showing that CWIP inclusion is preferable to other means of alleviating or preventing severe financial difficulty.

Under S. 1069, FERC may include CWIP in rate base only after conducting full evidentiary hearings and finding that:

a. The utility will be in severe financial difficulty unless some or all CWIP is included in rate base.

b. That inclusion of some or all CWIP is necessary, as shown by clear and convincing evidence, to alleviate or prevent severe financial difficulty.

c. The facility is reasonably necessary to meet demand at least cost.

d. If serious allegations of mismanagement are contained in the record of the proceeding, that such management is not likely to hinder alleviation or prevention of severe financial difficulty in the future.

e. That the long-term benefits of CWIP inclusion to the utility's wholesale customers are sufficiently important to necessitate short-term rate increases.

f. That the utility's wholesale customers who would be charged for CWIP inclusion have been offered a reasonable opportunity to buy into the facility under construction.

g. That CWIP inclusion will not unreasonably impair wholesale customers' ability to serve their retail customers at least cost.

h. That the applicant will discontinue the capitalization of AFUDC for that CWIP which is included in rate base.

Furthermore, the bill provides that no rate increase approved by FERC under this procedure may:

a. Be charged for electricity sold before the date of the final FERC order.

b. Exceed the amount necessary to alleviate or prevent applicant's severe financial difficulty.

c. Be so substantial as to have anticompetitive effects, including price squeeze.

d. Be applied to any customer who owns part of the facility, except to the extent that the customer's projected purchases from the facility exceed its ownership interest therein.

e. Be otherwise unduly discriminatory, preferential, or in excess of a just and reasonable amount.

A quick glance at the very complex and vague requirements summarized above is sufficient to establish that there would be no real probability of a utility's being able to include any amount of "other" CWIP in rate base if either bill is enacted. Indeed, in view of the experience under FERC Order No. 555, which included a similar "financial distress" test, these legislative proposals would discourage most utilities from even applying for inclusion of "other" CWIP under the proposed requirements.

I should also point out that some of the filing requirements and regulatory findings that would be imposed by H.R. 555 and S. 1069, deal with matters which already are subjects of extensive consideration at the state level. There is no need to duplicate these same considerations at the federal level. The proposed legislation would introduce additional delay and costly litigation to the already lengthy process of obtaining final approval of wholesale rate filings. In fact, in the real world of administrative and legal due process, the requirement for the Commission to make these findings would virtually guarantee, as a practical matter, that inclusion of CWIP would not be allowed or, if allowed, would be approved long after the "hardship" period had begun.

IX. The Risks of Prescriptive Legislation in the Area of Utility Ratemaking

Legislation such as S. 1069, H.R. 555, and S. 817, would nullify the outcome of the lengthy rulemaking proceeding undertaken by FERC on the CWIP issue and is therefore inappropriate, unnecessary, and grossly unfair to all participants. This is especially true since the new rule is still under judicial review wherein the court will address many of the same issues raised by those advocating the pending legislation. Furthermore, such action by Congress would set a precedent inviting parties dissatisfied with the outcome of a particular Commission rulemaking, or even a rate case, to seek a reversal of such outcomes through legislative means, rather than using the appropriate administrative and judicial mechanisms established by Congress specifically for this purpose.

X. A Comment on Recent Plant Cancellations

Recent news stories reporting the cancellation of several major plants under construction have somehow been linked to inclusion of CWIP in rate base. Some have suggested that CWIP inclusion was a principal factor encouraging utilities to construct "excess capacity." The facts are directly contrary to such assertions.

As noted earlier, recent economic and financial conditions have resulted in strong disincentives to build any new plant -- with or without CWIP in rate base. In virtually all cases where the issue of plant cancellation has been addressed by regulators, the initial decision to build was determined to be a prudent decision based on the best available forecasts of electricity demand and the alternative power supply sources then available to the utility. Subsequent decisions to cancel have been the result of a continuing reassessment of these considerations.

XI. Summary

Based on the considerations outlined above, EEI and its member companies strongly oppose the enactment of H.R. 555, S. 1069, S. 817 or any similar legislation restricting FERC authority to include CWIP in wholesale electric rates. Such legislation would:

(1) deny ratepayers and utilities the economic benefits and lower long-term rates which FERC has determined to result from a policy of including CWIP in rate base; and

(2) set a precedent for legislative involvement in the utility ratemaking process and subject all future regulatory decisions to an even greater level of uncertainty than currently prevails.

(3) Reinforce the existing investment bias against constructing more capital intensive but lower cost facilities and plant; and

(4) Further erode investor confidence in the financial condition of the utility industry thereby increasing the cost-of-capital for financing new construction.

Sustaining future economic growth in this country requires adequate and reliable energy sources. Electric power will play a crucial role in this effort, because of its ability to utilize a variety of domestic fuel sources and its versatility, which make it the preferred energy source for a growing number of industrial applications. Given the long lead time in constructing major new generating facilities and their increasing costs, exacerbated by growing regulatory uncertainties, electric utilities may not be able to respond to this need. Future economic growth may thereby be restricted and our competitive position in global markets will have been weakened.

Responsible and responsive ratemaking is needed to maintain the financial viability of the electric utility industry. Inclusion of CWIP in rate base is an important, sensible, and desirable step in that direction; indeed it is a necessity. Should legislation effectively prohibit the inclusion of CWIP in rate base, I respectfully submit that the utility's obligation to serve where needed, when needed and at reasonable cost would have to be reconsidered. There can be no meaningful "obligation" to serve, unless a utility is given the "means" by which it can meet its service obligations.

Utility companies must compete in the marketplace for capital along with all other entities. Given the continuing imbalance between investor risk and investor returns, a problem which is exacerbated by the inability to earn a current return on investment (in some cases even *after* the facilities are operational) utilities will be unable to finance needed facilities. The results of excluding CWIP from rate base will be higher long-term rates and less reliable service as well as limiting the growth of our national economy.

Appendix A

The following discussion responds to several of the major arguments and assertions that have been made by proponents of the proposed legislation.

1. Abdication of Responsibility

   - Proponents' Argument: FERC has "abdicated" its duties under the Federal Power Act to set electric utility rates on a case-by-case basis through its adoption of a rule allowing utilities to put half their CWIP in rate base "automatically".
   - Response: This is contrary to the facts since under the new FERC rule, electric utilities are only assured an opportunity to file for CWIP. Applications for wholesale rate increases which include CWIP are treated as normal rate applications under the Federal Power Act, and are subject to suspension and refund like any other rate change applications. CWIP is but one element of the overall cost of service considered by the Commission in setting just and reasonable rates. In this sense, CWIP is no more "automatic" than anything else in a FERC rate case.

2. Risk Transfers and Plant Cancellation

   - Proponents' Argument: The financial risks of plant investment and subsequent cancellation ... are "transferred" from shareholder to ratepayer.

- Response: This is not the case. Inclusion of CWIP in rate base affects only the timing of recovery of the financing charges on capital invested in new construction. Investors still provide all necessary capital and recovery of the principal by investors is still achieved via depreciation charges after the plant is in service. With specific regard to cancellation and uneconomic investment, the investor always remain at risk for recovery of a return on his investment. The treatment of cancellation costs is not affected by the FERC rule on CWIP; it is the subject of an existing body of law, which focuses, at all commissions (including the FERC) on prudency and equitable risk-sharing. It should be noted that, in virtually every case in which construction or cancellation decisions involving investor-owned utilities have been examined by state and federal regulatory agencies, they have been found to have been reasonable and proper based on information available at the time the decision is made, and utilities have been allowed to recover the costs of the facilities, including - AFUDC. The Commission's new rule also requires a utility filing for CWIP to include information demonstrating that CWIP to be included in rate base has been undertaken as part of least-cost investment strategy. This provides customers with additional assurance that proposed investments are reasonable and prudent.

3. Higher Long-Term Rates Result if CWIP Included in Rate Base

- Proponents' Argument: Rates with CWIP "are higher in the short term, and, quite probably, over the long term as well."
- Response: In the long term, inclusion of CWIP in rate base means

lower rates for all ratepayers. Ratepayers pay higher rates over the life of a plant if CWIP is not included in rate base. Other effects of excluding CWIP from rate base, which harm long-term ratepayer interests include:

- The utility's cost of debt and equity capital is higher (estimates range from 50 to 100 basis points) because of increased investor risk perceptions.
- The customer pays a very large one-time increase in rates when new plants go into service (i.e., "rate shock").
- The customer is given a "distorted" price signal and has no incentive to adjust electricity consumption to economically efficient levels.
- A clear bias is created against least-cost resource options if they are more capital intensive than alternatives with lower "front-end" capital costs.

4. Substantial Short-term Rate Increases Will Result

- Proponents' Argument: The financial impact of this new rule to consumers is "substantial". Filings to date are just "the tip of the iceberg".
- Response: First, for the first two years, FERC's rule limits rate increases for CWIP to 6 percent per year. Of the many utilities that have asked for wholesale rate increases, only 14 have sought to include CWIP; half of those have not even asked for the full 6 percent increases to which they were entitled under the rule.

Further, CWIP related rate increases under the new FERC rule amounted to less than one percent of total rate increases filed during 1983.

5. Traditional Ratemaking Treatment of CWIP
   - Proponents' Argument: FERC is "violating" the "principle", traditionally recognized by regulatory commissions, that CWIP is "extraordinary rate relief".
   - Response: While the regulatory treatment of CWIP varies greatly from state to state, approximately 3/4 of all state commissions currently allow some or all CWIP in rate base. Treating inclusion of CWIP as extraordinary rate relief is the exception, not the rule. FERC's earlier treatment of most CWIP as extraordinary relief (under Order No. 555) was abandoned by the Commission as unworkable. From 1975 to 1983, FERC only allowed CWIP in rate base (other than the pollution control and fuels conversion) if a utility demonstrated that it was in "severe financial distress". The recognition that FERC's former policy was a failure was a major consideration leading to the recent rulemaking resulting in the adoption of Order No. 298.
6. CWIP Discourages Alternatives to New Central Station Generation
   - Proponents' Argument: Inclusion of CWIP in rate base encourages utilities to build "excessive" or "capital-intensive" plants and discourages "least-cost" investments.
   - Response: As a result of financial trends over the past decade, particularly their inability to earn a market return on invested capital, most utilities lack an economic incentive to build any new plant, with or without CWIP in rate base. Inclusion of CWIP

may serve to eliminate a growing bias against generating alternatives that are capital-intensive but more efficient and cost-effective over the life of the project. In this sense, including CWIP in rate base will permit utility management to select the least-cost resource options without regard to financial constraints. This assures ratepayers of the lowest cost electric power supply. Finally, the new rule requires submission of information which would allow the Commission to determine if proposed construction expenditures are consistent with a "least-cost" investment strategy. The Commission specifically notes that under the new rule, "utility management will be held accountable for the prudence of costs of its construction program" while allowing [the Commission] "to consider the prudence issue earlier in a construction program than under an approach that only permits capitalization of AFUDC prior to a plant's in-service date."

7. Senior Citizens and Others Paying for Plants They May Not Use

- Proponents' Argument: Many ratepayers, particularly the elderly, pay a portion of the costs of new facilities from which they will never benefit because new power plants take so long to build.
- Response: In most cases, "today's" ratepayer is also "tomorrow's" ratepayer and thus will derive the benefits of new plant constructed to serve a growing need for electricity. In many cases, new construction is also needed to replace or upgrade existing plant to assure adequate, reliable and low cost electric power supply to current customers. A utility is obligated to construct

new capacity to meet all reasonable future needs of both its existing customers and its new customers. The distinction between plant in service and plant under construction, while useful for accounting purposes, is misleading when used in the context of the utility as an ongoing economic concern which must be prepared to meet future customers' demands. Just as current taxpayers support the needs of tomorrow's essential public services, such as schools, and highways, so too must a utility be allowed to recover, from current ratepayers, the cost related to providing for future electric service needs.

8. Price Squeeze - Anticompetitive Effects

- Proponents' Argument: Price squeeze or other anticompetitive effects can result from allowing CWIP in rate base.
- Response: Concerns that application of the FERC rule on CWIP will create a "price squeeze" are without merit. The fact is that many cost factors must be evaluated to determine a utility's cost-of-service and to evaluate price squeeze allegations. For example, there are numerous differences between federal and state ratemaking practices: rate base valuation, components of rate base, cost allocation, rates of return, test periods, etc. Any difference in the treatment of these issues could be alleged to create a price squeeze. It is this complex mix of factors which make it impossible to come to any generic conclusion, as proponents have done, that the inclusion of CWIP in wholesale rate base will create a competitive disadvantage. Furthermore, the FERC rule states that allegations of price squeeze related to a CWIP

filing are to be considered on a case-by-case basis, and if remedial action is appropriate to offset a potential price squeeze situation, it will be based on determinations made on a case-specific basis.

9. Double Whammy Effect

- Proponents' Argument: Including CWIP in rate base is "unfair" to wholesale customers who are building their own plant.
- Response: Few wholesale customers are building, or planning to build, enough new generating capacity to eliminate entirely the need for wholesale purchases of power from other utilities. For those rare cases where wholesale customers are becoming totally self-sufficient, FERC's final order in Docket RM81-38 allows such customers "to escape liability for CWIP if they can demonstrate that they bear no responsibility for the decision to build a new plant and will, in fact, purchase no full or partial firm power requirements which involve the new plant."

Senator **Murkowski**. Thank you very much. We appreciate your testimony.

My immediate question is why you haven't been able to convince the previous witnesses, but I'll save that till later, and move on to Mr. Guy Nichols, chairman and chief executive officer of the New England Electric System.

We welcome you to the committee.

STATEMENT OF GUY W. NICHOLS, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, NEW ENGLAND ELECTRIC SYSTEM, ACCOMPANIED BY DOUGLAS C. BAUER, SENIOR VICE PRESIDENT, ECONOMICS AND FINANCE, EDISON ELECTRIC INSTITUTE

Mr. **Nichols**. Thank you, Mr. Chairman.

If I may, I would first like to thank my friend the attorney general for the sales pitch for our New England Electric System security. I do hope there are a number of potential investors in the room. [Laughter.]

Next, I would like to address the question that you have repeatedly asked this morning, Mr. Chairman. Why does the old system need to be changed?

The old system needs to be changed because it's no longer in the customer's best interest. When we were a declining-cost industry, the regulatory concept of allowance for funds used during construction was in the customer's best interest, because with the AFUDC, the interest cost on the capital associated with construction was deferred, it was capitalized, it was put off to the future. This kept customer's costs down during that construction period.

When those plants came on line back in the 1950's and 1960's, they came on line at lower cost than was the average cost being experienced by that group of customers. And that lower cost was sufficiently lowered more than to offset the deferred interest costs. So the customers benefitted again.

It kept the price depressed. This encouraged consumption; this encouraged the demand for new efficient plants. They came in, they further lowerd the cost. Everybody was happy. We were in a declining-cost industry.

The answer to your question is really, we're no longer a declining-cost industry. Now, we're an increasing-cost industry. And now we're giving exactly the wrong pricing signals to our customers, if we continue that old AFUDC approach, which means delay the cost of financing till a later date.

Second, I'd like to comment on the FERC rule itself. This was not a rule that was hastily arrived at. They spent over 2 years in exhaustive proceedings with over 200 participants in those proceedings, and they developed a record that justified that the new rule was in the best long-term interest of utility customers.

I want to emphasize, this new rule is not automatic. In addition to the 50-percent limitation on the maximum amount of CWIP which may be included in the rate base, there's also a 6-percent limit on annual rate increases due to CWIP, and the utilities seeking the benefit of the rule must meet two very substantial and new test.

First, they must demonstrate that their construction costs are being prudently incurred; and, second, that the construction program is consistent with at least-cost strategy.

I submit that in the 1983 FERC rule, CWIP fundamentally changed its entire approach as regard review of construction costs.

Under the new rule, the costs are reviewed on an ongoing basis, on a current basis, rather than deferring the review until long after the fact.

As part of the FERC review process, utilities are required to demonstrate that they have carefully analyzed the potential use of conservation, all of the energy sources and all the rest. Unless that least-cost rule is met, FERC will deny the relief that's requested.

Our own system is very proud of our efforts in this area, and I think we're going to be able to justify this without question. But I can certainly assure you, and I think you're aware of them from the Attorney General's statements this morning that the intervenors in our rate proceeding take this standard very seriously. Within the next 2 weeks, they will be participating in FERC proceedings where our expenditures will have to face those two tests.

With your permission I'd like to turn, if I may, to two of the charts that were included in my testimony.

Senator MURKOWSKI. Please proceed, Mr. Nichols.

Mr. NICHOLS. Thank you.

I think that with these charts we can prove that with the CWIP rate base our customers will benefit. To illustrate the point, I'd like to start with the chart on your right. This chart depicts the capitalized cost of a medium size coal plant estimated to come in service in 10 years' time. The actual construction costs are represented by the red line, the bottom line.

And for a coal-fired plant, with all of the environmental protection equipment expected that we will be required to install, that represents over $900 million for a 500-megawatt plant coming on line in 1994.

Senator MURKOWSKI. Does that include your interest costs, too?

Mr. NICHOLS. No. That is just the basic construction cost; the payroll, the dollars spent to suppliers and equipment and that sort of items.

Now, if CWIP is excluded and we're forced to return to the AFUDC approach where all the interest costs associated with this $900-plus million must be capitalized. The project will go on our books at the time it's finished at a cost estimate shown by the top line, roughly $1.5 billion.

Now, with the 50-percent construction work in progress in rate base rule that FERC has adopted, could allow this project to be capitalized when the plant goes into service, as shown by the middle line, about $1.8 billion.

Senator MURKOWSKI. So there's a savings of 300 million or thereabouts.

Mr. NICHOLS. There's a savings of 300 million as regards to dollars that must be capitalized.

Now, if I may go to the next chart and just briefly describe the chart. What I have assumed is a typical utility about like our own in size, a typical utility that builds a 500-megawatt project, and with the conditions asumed as spelled out in my testimony, you see great shock results. If we are forced to stay with the AFUDC method, we see great shock results as depicted by the red lines in the chart on the left.

There are no rate increases, but assuming everything else is equal, there are no rate increases during the construction period, but in 1994, that vertical red line shows you are suddenly facing your customers with a rate shock of approximately 37 percent; a very significant rate shock for a very modest size generating unit.

Now, the brown line on the chart shows the rate peak both during the construction period and at the time the unit goes into service. And as you can see, there are modest increases in each of the years prior to it coming on line, but no increase more than 6 percent. And at the time that the plant comes on line——

Senator MURKOWSKI. Which is in 1994 in that chart?

Mr. NICHOLS. In 1994.

Sam, would you hold that up, please?

Senator MURKOWSKI. I can see it quite well. But from 1984 to 1988, there's virtually no cost associated, and then your 6 percent starts in 1988.

Mr. NICHOLS. That's correct.

Senator MURKOWSKI. And then in 1994, it's on line and away you go.

Mr. NICHOLS. In 1994 it comes on line, and at that point in time, you have a rate impact that is roughly 13 percent; the difference between roughly 13 or 14 percent and 25 or 26 percent. Your rate shock at the time it comes into service is less than a third of what it would be if we were forced to stay with the old AFUDC approach.

To me that is convincing evidence that the new FERC rule is far more advantageous to the customer from the viewpoint of rate shock alone.

If I may now have the last chart, Sam. I'm convinced that the exclusion of construction work in progress gives the customer the wrong pricing signal because we are now in a cost-increasing period for our industry.

Excluding construction work in progress tells the customer the price of electricity is less than its true cost. You are encouraging the customers to use more than they should. You are discouraging conservation, because the customer uses more, we must generate more. And in our region that means more coal and more imported oil, and this does also have an impact on the environment.

And in addition, with the customer using more, we must plan for additional new facilities. And the construction of these additional facilities also impacts the environment.

And as the previous chart shows, if you exclude CWIP, you increase the customer's long-term cost, because on the left-hand chart the difference between the red line and the brown line are long-term customer savings.

I think it's important to note that the benefits of the FERC 50 percent rule are just as important to the customers' for financing a healthy utility as they are for the customers of a sick utility.

Each of the benefits that Mr. Disbrow and I have discussed, lower financing costs, avoiding the bias against capital retention projects, more accurate pricing to our customers, and the avoidance of rate shock, and unnecessary environmental impact, all of these apply equally whether the utility is in robust financial health or whether the utility is being carried by its creditors.

In summary, Mr. Chairman, the passage of the legislation that you're considering, it would be to the exclusion of CWIP and would not be, I believe, in the best long-term interest of our customers.

I thank you.

[The prepared statement of Mr. Nichols follows:]

STATEMENT OF
EDISON ELECTRIC INSTITUTE
on S. 817, S. 1069 and H.R. 555

Presented by

GUY W. NICHOLS

Chairman and Chief Executive Officer

New England Electric System

Before the

SENATE COMMITTEE

ON

ENERGY AND NATURAL RESOURCES

Subcommittee on
Energy Regulation

April 12, 1984

Statement of
Guy W. Nichols

Mr. Chairman and members of the Subcommittee:

I am Guy W. Nichols, Chairman and Chief Executive Officer of the New England Electric System (NEES). NEES is the parent company of an investor-owned electric utility system which serves over 1.1 million customers in three New England states.

Together with my colleague, Mr. Richard E. Disbrow, the President of American Electric Power Company, I am appearing here this morning to discuss the issue of construction work in progress (CWIP), and to present the views of the Edison Electric Institute (EEI) regarding three pending bills addressed to this issue -- viz., S. 817 (introduced by Senator Metzenbaum), S. 1069 (introduced by Senater Chaffee) and H.R. 555 (voted upon by the House earlier this year). While the details of these bills differ, the effect of each bill would be to severely restrict the authority of the Federal Energy Regulatory Commission (FERC) to allow FERC-regulated companies to include CWIP-based charges in their wholesale rates.

EEI is the association of the nation's investor-owned electric utilities. Its member companies provide electric service to 99% of all customers served by the investor-owned portion of the industry, and to 77% of all users of electricity in the United States.

Mr. Chairman, our industry and I believe the members of this Subcommittee share a common goal: to assure adequate and reliable long-term supplies of electricity at the lowest reasonable cost. The issue is how best to achieve this goal.

The evidence compiled before FERC during the past three years demonstrates convincingly that adoption of a restrictive policy toward CWIP would be a serious mistake. The pending bills, if enacted, inevitably would result in higher long-term costs for electricity and would have other serious adverse impacts on customers. In addition, these bills could seriously threaten the efficiency and reliability of our bulk power supply system, and significantly impede efforts to reduce dependence upon imported oil.

As a result, EEI and its member companies strongly oppose each bill.

Mr. Disbrow has explained in considerable detail several of the major reasons for EEI's opposition to the pending legislation regarding CWIP. In my statement this morning, I will expand upon three specific points:

o FERC has adopted a balanced, carefully-reasoned approach towards CWIP.

First, it is important to recognize that the new FERC rule, which all three bills seek to overturn, reflects a balanced, well-reasoned approach towards inclusion of CWIP, which is thoroughly justified by the record established before FERC. Prior to adopting its new rule, the Commission undertook an exhaustive, two and one-half year analysis of the CWIP issue, in which all affected parties participated actively, including the major proponents of the three anti-CWIP bills.

The Commission acted only after it was presented with convincing evidence demonstrating that its earlier, more restrictive policy towards CWIP had been a major cause of the industry's financial decline, and had caused serious harm to customers.

Further, the final rule includes four very important safeguards to protect the interests of customers:

1. The maximum amount of CWIP which may be included in rate base is limited to 50%.
2. A six % limit has been set on the maximum allowable increase in rates due to inclusion of additional CWIP in rate base in any one year.
3. Utilities must demonstrate the prudency of their construction costs at the time inclusion of CWIP in rate base is sought. Under prior procedures, FERC's review of construction prudency occurred only when a plant was completed or abandoned.

4. Finally, utilities must demonstrate that they have adopted a least-cost strategy for meeting customer needs as a prerequisite for obtaining relief.

- Inclusion in rate base is the only sound regulatory policy.

The record before FERC demonstrates convincingly that exclusion of CWIP from rate base is an out-of-date policy, which no longer serves the best interests of customers. Specifically, exclusion of CWIP: (1) needlessly increases long-term customer costs; (2) leads to underpricing of electricity, and thus overstimulates demand; (3) thwarts conservation; (4) increases harm to the environment; and (5) exacerbates rate shock. From the standpoint of customer interests, therefore, there are compelling reasons to allow inclusion of CWIP in rate base by FERC-regulated companies.

- Need for inclusion of CWIP by companies which enjoy acceptable financial health.

Finally, the FERC record further demonstrates that the justification for allowing inclusion of CWIP in rate base is just as great for companies which presently enjoy good financial health as for those which do not, since each of the major benefits of allowing inclusion of CWIP (e.g. lower long-term customer rates, more accurate price signals, increased conservation and reduced environmental harm) is just as great for the customers of financially healthy companies as for the customers of companies which are financially weak.

In the remainder of my statement, I will elaborate upon these points and respond to several of the major arguments which have been raised against inclusion of CWIP.

I. FERC Has Adopted a Balanced, Well-Reasoned Approach Toward CWIP.

In evaluating the CWIP rule adopted by FERC on May 16th of last year, it is important to recognize that FERC did not act in a hasty or ill-considered manner. Instead, the Commission adopted its new rule only after it had studied the CWIP issue carefully for a period of over two and one-half years, and determined that a revised policy was justified. At the time the new rule was issued, the Commission provided a thorough, well-reasoned and well-documented explanation of its decision to revise its prior rule. Further, the Commission's new policy also was heavily influenced by its experience during the prior 10 years in applying a narrower, more restrictive policy towards CWIP, which proved to be a dramatic failure -- harming both utilities and the customers they serve.

A. Background.

FERC's predecessor agency, the Federal Power Commission (FPC), first attempted to tackle the CWIP issue generically almost 10 years ago, in 1974. Significantly, the proposed rule issued by the Commission at that time would have allowed inclusion of 100% of CWIP in jurisdictional rate base, without restrictive conditions.

The final Commission rule, adopted in 1976, allowed automatic inclusion of CWIP in rate base for only two items: pollution control equipment and coal conversions. Except for these two narrow categories, inclusion of CWIP in rate base was limited to cases of "severe financial distress" (the same standard proposed, either explicitly or implicitly, by each of the pending bills).

The 1976 rule proved to be a failure. Only one utility ever qualified for relief, even though the financial health of the industry declined drastically soon after the rule was issued. Further, there is a widespread consensus among financial experts and professional economists that this restrictive policy towards CWIP (which was copied by several state commissions) was a major cause of the declining financial health experienced by the utility industry during this period.

Despite this recognition, the Commission chose to react in a careful, deliberate manner in revising its 1976 policy towards CWIP. The Commission's first step, in the fall of 1980, was to initiate an inquiry into the financial health of the electric utility industry and the potential adverse impacts of poor financial health on the industry's customers.

Subsequently, in July, 1981, the Commission issued a notice of proposed rulemaking announcing its intention to revise its generic rules regarding CWIP. This notice was followed by the most intensive inquiry ever undertaken by the Commission into the impact of traditional policies towards CWIP on the long-term interests of customers. Three separate opportunities were provided to submit comments or testimony. During the course of the Commission's rulemaking proceeding, thousands of pages of testimony, comments and studies were submitted by over 200 organizations, reflecting the views of every major interest group affected by the proposed rule -- including the principal proponents of the pending bills.

The Commission's final rule, issued on May 16, 1983, is over 150 pages in length, and contains one of the most exhaustive analyses ever undertaken of the effects of traditional policies towards CWIP. The new rule allowed inclusion of up to 50% of CWIP in rate base under carefully controlled conditions.

B. Key Findings.

In its May 16th order adopting the new rule, FERC concluded that it was no longer "sound regulatory policy" to exclude CWIP from rate base. Conditions existing for the past decade justified a new approach. FERC made four key findings regarding the long-term prejudicial impacts on consumers from continued exclusion of CWIP:

- Increased cost of capital.

First, exclusion of CWIP results in substantial increases in the cost for new utility equity and new debt. Over time, these cost increases must be passed on to customers, needlessly increasing rates.

- Bias against capital intensive projects.

By making it more difficult for utilities to raise new capital on acceptable terms, exclusion of CWIP deters utilities from undertaking capital intensive projects, such as major new transmission facilities, or projects needed to reduce oil consumption, even when these projects have the potential to save large sums for ratepayers. Over time, the effect of preventing or delaying such projects is to increase substantially customer rates.

o Distorted prices for electricity.

Further, in an era when the cost of new generating capacity has been escalating rapidly, exclusion of CWIP from rate base distorts price signals, overstimulating demand for electricity, and ultimately requiring construction of otherwise unneeded plants.

o Rate shock.

Finally, for the same reasons, exclusion of CWIP from rate base exacerbates the rate shock imposed on customers when large base load units are placed in service. I will address this issue in more detail later in my testimony.

C. Important Safeguards.

Despite these compelling justifications for a revised approach towards CWIP, the Commission declined to adopt a rule allowing FERC-regulated companies to include 100% of CWIP in jurisdictional rate base. Instead, to ensure that customer interests are adequately protected, the Commission qualified the relief it granted in four significant respects:

- 50% ceiling on the amount of allowable CWIP.

First, even though the Commission explicitly recognized that a rule which allowed inclusion of 100% of CWIP in rate base might be in the best long-term interests of customers, it chose to limit the maximum amount of CWIP which it would allow in jurisdictional rate base to 50% of total CWIP (except for pollution control equipment and coal conversion, as to which a 100% rule still applies).

The Commission explained that this 50% limit represented an effort to reach an acceptable balance between the short- and long-term interests of consumers, by limiting the near-term increase in rates.

- 6% cap on the allowable increase in rates.

To further protect against adverse near-term impacts on customers during the transition period in which the new rule is being put into effect, the Commission also limited the maximum allowable increase in rates due to inclusion of CWIP in jurisdictional rate base in any one year to six %. (In fact, the increase in rates attributable to inclusion of CWIP in rate base under the new rule generally has been less than half this amount.)

o Prudence demonstration.

The most fundamental consumer protection imposed by FERC is a requirement that utilities demonstrate the prudency of their construction costs before any CWIP will be included in rate base. As FERC noted in its order, the final rule fundamentally reorients the Commission's review of construction costs. The rule

> "affords in effect an opportunity to review and judge the prudence of costs as those costs are incurred and claimed in rate base, rather than at a later point in time when a project is completed or abandoned and a potentially unwise investment has already been made."

By substantially advancing the date at which construction projects are reviewed, FERC has assured consumers that large construction projects will not be continued unchecked if changed circumstances dictate a different course of action.

o Requirement for demonstration of least cost strategy.

As a precondition for obtaining relief, the Commission also required utilities seeking inclusion of CWIP in rate base to demonstrate that their current construction programs constitute the "least cost strategy" for meeting customer needs.

The Commission put teeth into this restriction by explicitly requiring utilities to analyze the "relative costs" of adopting "alternative strategies" including, in particular, "cogeneration, small power production, ... management ... conservation ...

additions to transmission plant [and] increased purchases of power." Based upon its examination of each of these alternatives, each applicant for CWIP is required to demonstrate that its current construction program satisfies the "least-cost" test. In addition, provision is made for extensive discovery, to permit intervenors and the FERC staff to test the utility's claims.

NEES is proud of the efforts it has made over the past several years to aggressively take advantage of conservation, alternative energy sources and other measures to reduce the need to add new capacity on its system. As a result, my Company is confident it can meet the Commission's "least-cost" test.

I can assure the members of the Subcommittee, however, that intervenors in proceedings before FERC take this standard seriously.

In NEES' most recent rate case, for example, hearings on NEES' least-cost strategy are scheduled to begin in just 12 days, on April 24th. The Attorney General of Rhode Island, who testified before the Subcommittee this morning, has intervened in that proceeding, as have several other parties, and I have every reason to expect that the Attorney General and other intervenors will aggressively challenge each aspect of NEES' filing they believe might be deficient.

Their contentions will be adjudicated before an Administrative Law Judge, whose decision will be reviewed by the full Commission. If necessary, review also can be sought in the courts.

Thus, from the standpoint of public confidence, the effect of the Commission's filing requirement should be to provide an additional level of assurance that FERC-regulated companies are pursuing a least-cost strategy for meeting customer needs.

Finally, I should note that, while FERC found no evidence that the new rate would have anti-competitive effects, it specifically provided for hearings if an anti-competitive "price squeeze" ever is alleged.

D. Conclusion.

The current CWIP rule now in place at FERC is a textbook example of an expert federal agency acting in a careful and deliberate manner, and determining, based upon years of practical experience and on today's conditions, that its prior policies should be reformulated. While Congress remains free to overturn FERC's action, it should do so only if there is compelling reason to reject the new FERC rule. The Subcommittee also must be mindful of the fact that if it denies FERC the opportunity to respond to a regulatory need by the adoption of a pro-CWIP policy, the problem that FERC sought to address will remain. It simply will mean that FERC may be forced to rely upon regulatory responses that are far more costly to consumers.

II. In an Era of Escalating Cost and Concern for Conservation, Inclusion of CWIP in Rate Base Is the Only Sound Regulatory Policy.

In the final analysis, the members of this Subcommittee will chose to evaluate for themselves whether they agree with FERC that it is in the best interests of customers to allow inclusion of substantial amounts of CWIP in rate base at the wholesale level.

For reasons I will now explain, the record before FERC convincingly demonstrates that, from the standpoint of consumer interests, it is an historical anachronism to continue to exclude CWIP from rate base. Specifically, continued exclusion of CWIP:

1. increases long-term customer costs;
2. artificially over-stimulates the demand for electricity;
3. causes more fuel to be consumed (resulting in greater environmental impacts);
4. results in more powerplants being built (once again increasing potential harm to the environment); and
5. exacerbates rate shock.

For these reasons, I believe there is compelling justification for a rule which allows inclusion of at least 50% of CWIP in rate base, if not more. I should point out that investor-owned electric utilities are not alone in advocating inclusion of CWIP in rate base as the most cost effective method of financing new construction. A number of publicly owned utilities recover constructing financing costs through rates during the construction period.

The head of Britain's Central Electricity Generating Board, a quasi-public entity responsible for Britain's power supply, recently strongly criticized those American utilities that do not include CWIP in rate base. In his view: "What is missing is that you do not have your business on a sound financial basis." By contrast:

> "Our notion has always been that because the present consumers of electricity have benefited by investments made by their ancestors, they should also accept a similar responsibility for the future. And this is reflected in our practice of charging interest during construction against revenues, so that when a plant is completed, the only construction cost is the basic construction cost."

As a result, rate shock is not a problem in Britain (Forbes, 10/10/83, p. 50).

A. The CWIP Issue in a Nutshell.

While the debate concerning the CWIP issue tends to become technical and complex, the basic concept is reasonably straightforward. Fundamentally, the question is one of timing -- i.e., when will utilities be allowed to collect from their customers for interest costs and other financing charges incurred during construction of new transmission facilities and generating plants?

Two possible approaches may be utilized: inclusion of CWIP in rate base or the alternative, AFUDC method of accounting. ("AFUDC" stands for "allowance for funds used during construction.")

Under the CWIP approach, during periods in which new facilities are being constructed, utilities are allowed to charge their customers on a current basis for the amount of the interest charges they incur in order to finance construction of new plants -- but not for the actual cost of the facilities.

Under the alternative, AFUDC method of accounting, companies are barred from charging their customer on a current basis for the amount of these financing costs -- no matter how large they may be. Instead, collection of interest charges and other financing costs must be deferred and added to the actual cost of the plant (i.e., capitalized), for subsequent recovery from ratepayers after the facilities are brought into service. In effect, the utility is given a rather questionable "I.O.U." that it hopes it will be able to collect from its customers at a much later date.

In theory, the AFUDC method should result in costs for electricity being lower during the period in which a new facility is being constructed than they would be if inclusion of CWIP in rate base is allowed. Once the facility goes into service, however, this near-term reduction in rates is immediately offset by a steeper net increase in rates. This is because under the AFUDC method the net addition to rate base once construction is completed includes both the actual cost of the plant and the accumulated interest during the construction period.

By contrast, under the CWIP method, charges will be higher during the construction period, since customers will be charged currently for interest charges and other financing costs incurred during construction. This near-term increase in rates will be offset, however, by a lower net increase in rates after the facility goes into service. This is because payment of interest during the construction period automatically reduces the amount to be added to rate base after construction is complete.

B. During Earlier Time Periods, the AFUDC Method of Accounting Was Consistent with Sound Energy Policy.

A respectable argument can be made that, as recently as the late 1960's, the AFUDC methods of accounting were consistent with sound energy policies.

This conclusion is based on the following factors:

- Construction costs were relatively low (e.g., $100-$150/kilowatt of capacity), as were borrowing costs.
- Construction of new plants could be completed in periods as short as two or three years.
- The industry was experiencing declining costs (e.g., the cost of generation from new capacity, even with AFUDC added to construction costs, was lower than the average cost of generation from existing capacity. This decline was due to efficiency improvements in generation).

-- Because of these declining costs, customers benefited from lower rates during construction through the use of AFUDC and even lower rates once construction was completed. Oh happy days!

-- There was relatively little concern regarding the amounts of fuel consumed, or the adverse environmental impact from generating additional electricity or building additional generating facilities (in fact, many plants were sited within municipalities).

In those declining cost days, construction costs were low and lead times short; AFUDC (i.e., accrued financing charges) seldom exceeded five % of utility company earnings. Consequently, the impact of AFUDC "I.O.U.'s" on the perceived riskiness of investing in utility company stocks and bonds was negligible.

In that earlier time period, the use of the AFUDC method of accounting arguably gave "better" price signals to the consumers of electricity than price signals obtained by allowing inclusion of CWIP. Use of the AFUDC method kept prices for electricity at a given point in time lower than they would have been under the CWIP approach, encouraging greater consumption of electricity. But this was considered an acceptable result, since the cost of producing electricity was declining, and lower prices more accurately signaled future trends.

C. Radical Changes Have Occured.

During the past 10 to 15 years, these conditions have changed dramatically. It will of course come as no surprise to the members of this Subcommittee to be told that the electric utility industry no longer is experiencing declining costs. Just as importantly, public attitudes concerning fuel consumption and environmental concerns have changed radically. Reducing oil imports has become a major national goal, and there is a consensus that adverse environmental impacts should be kept to the lowest reasonable levels.

Further, the increase in the cost for new generating capacity has been staggering. The projected cost for new coal-fired capacity has increased 20-fold, and the increase for nuclear units has been even greater. In addition, borrowing costs and the number of years required to complete construction have scared.

The New England Power Pool (NEPOOL) projects, for example, that planning and construction of a new coal-fired unit to be built in New England would require a minimum of 10 years. Thus, a unit, planning for which began today, would not begin operation until 1994, at the earliest. Further, depending in part upon treatment of financing charges on CWIP, the Pool estimates that the cost to construct such a unit would be approximately $3,000/kilowatt, or $1.5 billion for a single, moderate-sized 500 MW coal-fired unit.

If no CWIP is allowed in rates, total AFUDC could amount to as much as $600 million -- for a single moderate-sized unit. Further, the first year bus bar cost for electricity, assuming no CWIP, would be 16.4¢/kilowatt hour -- or more than four times the current average bus bar cost for existing generation in New England.

These changed conditions have far-reaching implications for the choice between AFUDC and CWIP.

- First, tomorrow's plants are expected to produce power at four times today's costs; thus, today's costs do not give customers an accurate price signal.
- The effect of such current price signals inevitably is to artificially stimulate demand, since the price charged the customer is far below the utility's true marginal cost. This in turn increases the need to operate existing generating units, increasing fuel consumption (including consumption of imported oil -- which is the marginal source of supply for most utilities).
- Increased operation of existing generating units also results in the production of more effluents, increasing the potential harm to the environment.

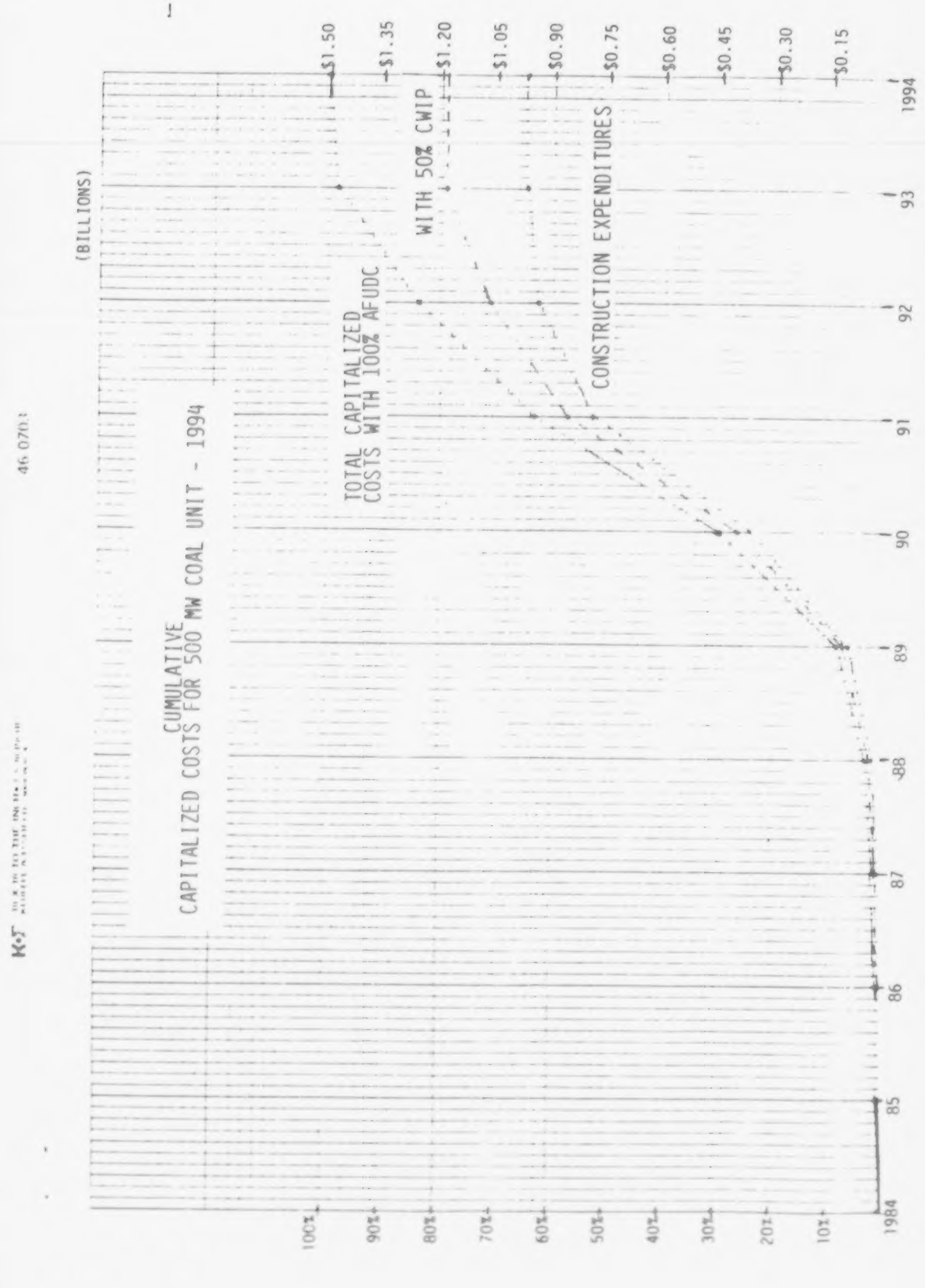
- In addition, increased consumption today induced by abnormally low prices dictates that utilities build new plants, which eventually leads to further impacts on the environment.

In my judgment, these severe distortions induced by artifically low prices are sufficient justification for a rule that allows inclusion of 50% of CWIP in rate base. Inclusion of 50% CWIP will not completely eliminate the distortions in current pricing. But it will at least reduce the extent of these distortions by more accurately signalling the cost of new generating capacity several years before a new plant goes into operation, and it will do so on a gradual, phased-in basis. This in turn will encourage conservation, reduce fuel consumption and avoid unnecessary damage to the environment. Further, these goals will be accomplished merely by advancing the date on which the utility begins recovery of its financing costs, not by increasing utility company earnings.

In addition, two other factors argue strongly in favor of inclusion of CWIP.

The first is the importance of avoiding rate shock. As noted above, NEPOOL projects that new coal-fired generating capacity could cost up to $3,000/kilowatt, if CWIP is excluded from rate base, or $1.5 billion for a moderate-sized, 500 MW unit. Of this amount, approximately $1,800-$1,900/kilowatt, or

$900 million, is attributable to the direct cost of the unit. The remaining $1,200/kilowatt, or $600 million, is attributable to accrued AFUDC.


K-T
46 0703
CUMULATIVE
CAPITALIZED COSTS FOR 500 MW COAL UNIT - 1994
(BILLIONS)
TOTAL CAPITALIZED
COSTS WITH 100% AFUDC
WITH 50% CWIP
CONSTRUCTION EXPENDITURES
$1.50
$1.35
$1.20
$1.05
$0.90
$0.75
$0.60
$0.45
$0.30
$0.15
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
1984
85
86
87
88
89
90
91
92
93
1994

Adding capacity which is that expensive inevitably will lead to a sharp increase in rates. As shown on the next graph, if no CWIP is allowed in rate base, the addition of one such unit on a typical utility system in the Northeast could result in a rate increase of over 35% in a single year. For customers who have not planned for such an increase, the shock to their family budgets could be severe.

Graph Paper
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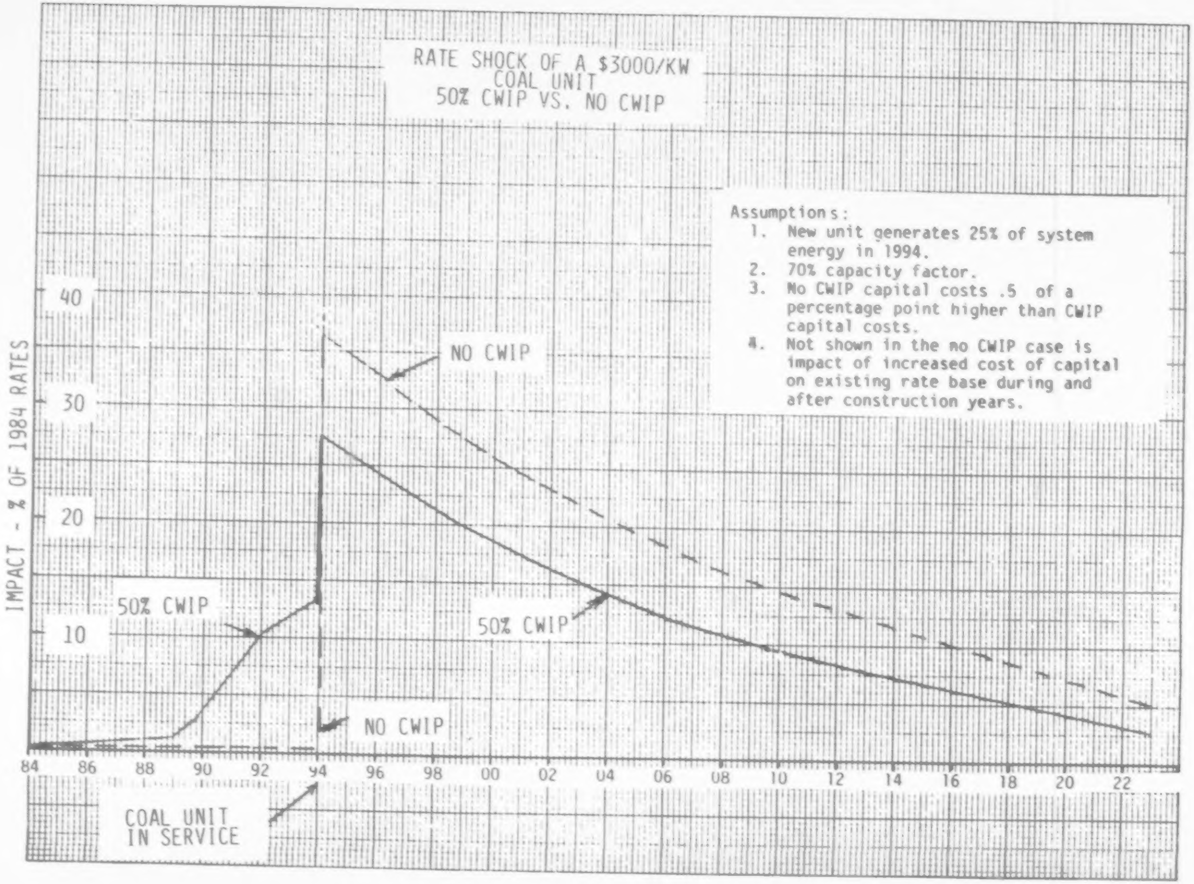

RATE SHOCK OF A $3000/KW
COAL UNIT
50% CWIP VS. NO CWIP

Assumptions:

1. New unit generates 25% of system energy in 1994.
2. 70% capacity factor.
3. No CWIP capital costs .5 of a percentage point higher than CWIP capital costs.
4. Not shown in the no CWIP case is impact of increased cost of capital on existing rate base during and after construction years.

While inclusion of 50% of CWIP in rate base will not eliminate the need to increase rates after the plant is completed, it will reduce significantly the total addition to rate base associated with construction of the plant. As a result, the net increase in rates will be considerably lower. Further, since the cost for new generating capacity will begin to be reflected in rates several years before the plant is completed, the extent of the increase in any one year will be reduced dramatically, and customers will be able to adjust to higher costs for electricity gradually over a period of several years, without being shocked.

D. Impact on Capital Costs.

In some respects the most compelling argument for allowing inclusion of CWIP in rate base relates to the effect of excluding CWIP on the cost to the utility and its customers of selling new equity and debt. As noted, in earlier time periods, when AFUDC generally accounted for less than 5 % of utility company earnings, investors were relatively indifferent to the choice between AFUDC and CWIP. However, at a time when AFUDC "I.O.U.'s" can amount to several hundred million dollars for a single unit, continued exclusion of CWIP inevitably leads to significant increases in the cost of new capital, to the ultimate detriment of customers.

The reasons for this link between exclusion of CWIP and higher costs for new equity and debt are systematic and predictable, and were thoroughly documented in the recent rulemaking proceeding before FERC.

Adverse impacts on the quality of earnings. Continued exclusion of CWIP from rate base has a direct and immediate impact on the perceived quality of utility earnings. The financial community has never treated AFUDC "I.O.U.'s" as the equivalent of current cash earnings; nor is there any reason that it should. Consequently, as the amount of accrued AFUDC begins to increase, the utility's financial condition may begin to deteriorate -- often at an alarming rate.

This deterioration in the attractiveness of investing in utility stocks and bonds occurs at the worst possible time: when the utility is in the midst of its construction program, and needs to raise additional funds. The financial condition of the utility typically reaches its lowest level when the need to raise new capital is at its height.

Some utilities may be foreclosed from the capital markets, and others may be required to pay more to borrow money. In the end, the customer bears the costs, either in the form of pass-through of higher borrowing costs, or as a result of the cancellation of cost-effective projects which otherwise would have reduced customer rates.

By contrast, a policy of allowing inclusion of CWIP in rate base leads to an immediate improvement in the quality of the utility's earnings when the need to raise new capital is at its height, significantly reducing long-term costs.

Bond deratings. Exclusion of CWIP from rate base inevitably results in poorer internal cash generation and reductions in interest debt coverage ratios since most bond indentures exclude all or a major portion of AFUDC earnings in determining coverage ratios. As with the reduction in the quality of earnings, the decline in these financial indicators occurs when the utility's need to sell additional stock is at its height, putting further upward pressure on the utility's cost of capital -- and ultimately leading to increased customer rates.

When these pressures become severe enough, exclusion of CWIP results in reductions in bond ratings. Once a utility's bonds have been derated, costs to customers are certain to increase. A quality bond rating is a precious commodity. Once lost, it takes years to restore investor confidence to the point where restoration of the earlier, higher rating is achieved.

Financing flexibility. Finally, exclusion of CWIP from rate base increases dramatically the utility's total financing requirements, and thus reduces the utility's flexibility in determining when it will attempt to sell new debt and equity. As a result, many utilities are forced to market new securities even when market conditions are poor, further increasing costs.

The impact of exclusion of CWIP from rate base is difficult to quantify precisely, since several other factors (including interest rates) also may have a significant effect on the return demanded by the market. It is worth noting, however, that utilities which have been allowed to include substantial amounts of CWIP in rate base typically have had some of the best bond ratings and lowest costs for equity of any companies in the industry. Further, studies by expert economists suggest that a reduction in the cost of capital of at least 50 to 100 basis points ordinarily would be expected to occur. For a company the size of NEES, this translates into a reduction in rates totalling tens of millions of dollars per year.

* * * * * *

Thus, while inclusion of CWIP leads to a modest increase in rates during the period of plant construction, the long-term benefits to customers from inclusion of CWIP in rate base are clear -- in the form of lower long-term rates, reduced fuel consumption, better price signals, increased conservation, and lesser impacts on the environment. These long-term benefits more than compensate for the short-term increase in costs.

III. Inclusion is Needed Even for Utilities Which Presently Enjoy Good Financial Health.

It is important to recognize that the need to include CWIP in rate base is just as compelling even when the utility which seeks to include CWIP enjoys good financial health.

Most notably, each of the benefits just discussed -- lower financing costs, avoiding the bias against capital intensive projects, more accurate price signals, and price stability -- applies with equal force even when the utility seeking CWIP is financially sound at the time its application is filed.

Further, for many utilities, present financial health is directly tied to favorable policies towards CWIP. The trend at the state level has been to allow increased amounts of CWIP in rate base, and the stock and bond markets are already taking into account the effect of the present FERC rule at the wholesale level. If these policies were to be reversed, the adverse effects could be immediate and abrupt.

The experience of the past decade demonstrates that it would be a mistake to deny inclusion of CWIP based upon present financial health. Absent fundamental changes in regulatory conditions, improvements in the financial conditions of utilities have tended to be short-lived, and may merely reflect a temporary reaction by the stock market during periods in which interest rates are falling.

Finally, it is fundamentally mistaken to withhold relief until a company's financial condition already has deteriorated, and the utility's cost of capital already may have increased. The maximum benefits of including CWIP in rate base only can be obtained by a clear, predictable rule, which allows inclusion of CWIP in rate base irrespective of financial health.

IV. Response to Counter Arguments.

Despite these clear and compelling benefits from including CWIP in rate base, the new FERC rule has been attacked on a variety of grounds. In the remainder of my statement, I will respond point by point to each of the major arguments which have been raised.

A. Forced Investment by Ratepayers.

One of the more specious arguments raised is the contention that inclusion of CWIP in rate base is a method of forcing customers to make investments which should properly be made by shareholders. This argument is flatly incorrect. As observed previously, even when 100% of CWIP is included in rate base, it is investors who provide the funds necessary to finance construction of the plant, and who bear the risks associated with the project. Charges to ratepayers are limited to the current financing charges associated with the plant. Recovery of the investor's contribution to the direct cost of the plant continues to be deferred until after construction of the plant has been completed. Further, in determining whether the utility will be entitled to recover for its investment, the traditional prudence standard still must be met.

B. Incentive To Overbuild.

For many of the same reasons, it also is incorrect to argue that inclusion of CWIP in rate base will provide utilities with an incentive to overbuild. The experience of the past decade demonstrates that whenever a utility undertakes a new construction project -- no matter how desirable from the standpoint of customers -- it subjects itself to substantial risks. Inclusion of CWIP in rate base will reduce, but not eliminate, one of those risks -- i.e., the risk that the utility will be unable to finance its construction program on reasonable terms. Every other risk remains -- including the risks of reduced demand for electricity, inflation, changed regulatory requirements, and a host of other factors each of which ultimately may impede the utility's ability to obtain recovery of the full amount of its expenditures, through no fault of its own.

Further, as has been shown, the effect of the new FERC rule is to add greater protection against the theoretical risk that a utility might overbuild, since the rule provides for FERC review of construction projects at a much earlier point in time, and forbids inclusion of CWIP unless the utility succeeds in demonstrating that its construction program reflects the least-cost strategy for meeting customer needs.

C. Consistency with Other FERC Policies.

The argument often is made that inclusion of CWIP in rate base is inconsistent with the "used and useful" principle, or the principle of intergenerational matching. This argument too is plainly false. Inclusion of CWIP in rate base provides a direct benefit to present ratepayers, since it allows them to plan for the future with a better assurance of adequate long-term supplies. Further, FERC and other regulatory commissions frequently have recognized that the "used and useful" principle is not the only consideration which governs ratemaking. Instead, ratepayers frequently have been asked to bear higher near-term rates, for research and development or other similar costs, when the potential for long-term benefits justifies the near-term impact.

In this regard, inclusion of CWIP in rate base is no different from the principle Congress follows daily in taxing the present generation to pay for roads, schools and numerous other projects which will benefit future generations -- namely, that the present generation should help to invest in a sound long-term future.

D. Abandoned Plant.

Inclusion of CWIP in rate base does not result in an unwarranted recovery of financing costs if a construction project is cancelled prior to completion. First, FERC's prudency review as a prerequisite to inclusion of CWIP in rate base should minimize the instances where a portion of a construction project is included in rate base and the project is later cancelled. In any event, under established FERC precedent, a utility is entitled to recover through rates the costs, including AFUDC, of an abandoned plant upon a showing that the utility acted prudently in undertaking and later cancelling the project.[1] If a portion of the project were previously included in rate base, recorded AFUDC -- and thus the amount to be recovered through rates when the plant is cancelled -- would be correspondingly lower. In other words, the total dollars from ratepayers for a cancelled project is the same for the CWIP and no CWIP cases. In the CWIP case, some of the dollars are collected during the construction phase; in the no CWIP case, all of the dollars are recovered after cancellation.

E. Anticompetitive Effects.

Finally, there is also no substance to the claim that inclusion of CWIP in rate base will lead to anticompetitive effects. While wholesale customers frequently claim that wholesale rates are anticompetitive, findings in support of such claims have been rare -- either by FERC or by the courts. The new FERC rule provides adequate protection against the possibility that such effects will occur, by requiring case-by-case review whenever anticompetitive effects are alleged.

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[1] FERC, however, does not permit any return on the unamortized balance of the abandoned plant during the recovery period.

F. Scattergun Legislation Should Be Avoided.

Based upon the foregoing considerations, EEI believes there is a clear and compelling justification to retain the present FERC rule. If the members of the Subcommittee believe that further consideration is warranted, however, we would urge the Subcommittee not to act precipitously, or to legislate on one issue, without addressing other related questions.

In particular, before taking further action, the Subcommittee should investigate carefully the present financial needs of the utility industry, and the potential adverse impacts on consumers if inclusion of CWIP in rate base is denied. In addition, the Subcommittee should address other major issues affecting the industry, including the accuracy of present long-term power forecast; the cost-effectiveness of alternative sources of new generating capacity, and the potential long-term consequences if present construction programs prove to be deficient to meet long-term needs.

V. Conclusion.

The past decade has been a period of profound change for the electric utility industry. Load growth has declined substantially. Further, in the face of the financial shocks of the 1970's, most companies attempt to minimize the amount of their required capital expenditures. New commitments are made only after the potential contribution from conservation, load management and alternative energy sources all have been thoroughly explored, and the utility concludes that there is no alternative available to meet customer needs.

Despite these efforts, however, demand for electricity continues to increase, in part because customers increasingly are substituting electricity for other forms of energy including direct consumption of oil. Further, the electric utility industry remains the most capital intensive major industry in the United States, with the cost of new generating capacity projected to exceed $3,000/kilowatt, even for coal-fired units.

Over the next decade, therefore, the utility industry will continue to be required to spend massive amounts of new capital to complete cost-effective projects initiated in earlier years, replace aging generating capacity, and build new facilities needed to meet increasing customer demand. In New England alone, for example, capital expenditures are expected to exceed $4 billion over the next two years. Industry-wide, capital expenditures are expected to average $30-35 billion per year.

The evidence compiled before FERC demonstrates convincingly that inclusion of CWIP in rate base is the least-cost strategy for raising these funds. Inclusion of CWIP reduces long-term costs to customers, promotes conservation, avoids rate shock, and avoids environmental harm.

In an effort to achieve a balanced outcome, the Commission has limited the amount of CWIP which may be allowed in rate base to 50%, and conditioned the relief it granted in several other respects, each of which further protects customers.

Accordingly, EEI urges the members of the Subcommittee to oppose the three pending bills. Enactment would soon prove to be exceedingly costly to consumers.

EEI appreciates the opportunity to submit this statement, and will be pleased to respond to any questions.

Senator MURKOWSKI. Thank you very much, Mr. Nichols.

Our last witness on this panel is Douglas C. Bauer, senior vice president, economics and finance, Edison Electric Institute.

Are you going to use any charts, Mr. Bauer.

Mr. BAUER. Mr. Chairman, I'm not going to use any charts, and I'm also not going to make any statement.

My purpose here is merely to assist, should the occasion arise, in questions.

Senator MURKOWSKI. I think it would be helpful if the charts were made available to those people that are with us this morning. I think it was too bad that the first witnesses from FERC did not leave their charts. It's very helpful for the panel and the Chair to observe those. I always feel a little concerned about those who have been good enough to be with us and don't have the same benefit of following the testimony.

Mr. NICHOLS. Mr. Chairman, the two principal charts that I used are incorporated in my testimony, so the audience can follow from my testimony.

Senator MURKOWSKI. Thank you.

Your statements have been most helpful, and they certainly present a point of view that is supportive of the proposed changes.

I wonder if the panel could reflect on the apparent inability to prevail upon the responsible elected or appointed officials as we have recently had testify from the State of Rhode Island with regard to your particular point of view.

You have a dual responsibility in a sense, Mr. Disbrow and Mr. Nichols, in providing the region, and certainly the State of Rhode Island with the cheapest and most efficient power generation at the lowest cost, still recognizing your obligation to provide efficiencies in operation which dictate a return to your investors.

The point of view of the preceding witnesses was that this change would be contrary to the interest of consumers in the state of Rhode Island.

You make a good case. On the other hand, a statement that's been made by Senator Pell, and certainly substantiated by Senator Chafee was that there is an element of uncontrolled risk associated in the industry today as a consequence of potentially poor management, poor decisions, the state of the industry and the possibility of uncompleted plants that never get on line and the consumer being commited to underwrite the cost.

This seems to me, at least at this point in the testimony, to be the major void. Have you got any positive approaches to try and address this void?

The testimony from both parties is that their particular point of view is in the best interest of the consumer.

Mr. DISBROW. Well, Senator, I think you summed up the argument very well when you were talking with the lady Commissioner from Rhode Island, no one likes higher rates today.

It is a difficult chore to convince people that their best interest is served by a somewhat higher rate today with the benefit of a lower rate tomorrow and assurance of supply.

I think the public generally does not perceive at any future point in time there will be any shortage or failure to supply the electric energy needs of this country.

I think it's a very, very hard educational process perhaps, because obviously the things we say are considered to be self-serving.

But that's a simple matter of fact, that no one likes higher rates today.

Sen. Murkowski. Well, you haven't been able to convince the regulatory representatives of the state of Rhode Island that this is in the best interest of the consumer today.

Mr. Disbrow. It's a question of economic regulation and enlightened judgment on the part of their regulators.

I think the Federal Energy Regulatory Commission considered this exhaustively and reached the proper conclusion, a balanced decision between the competing interests of both ratepayers, who are not interested in short-term rate increases, and the utilities, who have the obligation to provide not only today but tomorrow.

Senator Murkowski. Collectively with your three companies, what percentage of the power generation that goes into the State of Rhode Island do you provide? I'm told that four-fifths comes from outside the State. Are the three of you representing a significant portion?

Mr. Disbrow. We provide nothing to the State of Rhode Island.

Senator Murkowski. You provide nothing. All right.

Mr. Nichols. I think I am the only representative that is involved with that supply, and I believe our wholesale company supplies three-quarters approximately of the kilowatt hours.

Senator Murkowski. So you would provide three-quarters of the four-fifths?

Mr. Nichols. Yes. I would like to comment on——

Senator Murkowski. Well, before you get into—I want you to go ahead and comment, but you're the head of a large regional supply of electricity. What is your off-hand evaluation of the risk associated with commitments made by New England Electric System that might jeopardize some of the management decisions that you might make that would result in—or other economic, or environmental dictates that would result in an plant that you have in planning or under construction that might not be completed, or 1 that you have an interest in. What are the odds? Is it 1 in 10, or 1 in a 1,000, or can you give this committee a little reassurance as to what this risk is that has been addressed by those in opposition to this legislation?

Mr. Nichols. I think I can answer your question by assuming a risk—I don't know whether it's 20 percent or 15 percent. But when you start on the construction of a major facility there is a finite risk it will never be completed. Hopefully it's a very small risk, or else we wouldn't start. But there is a finite risk.

What we're addressing this morning is how best to keep that risk to a minimum. I submit that with the 1983 FERC rule, the customer is much better protected than it was if we abandoned the 1983 FERC rule and go back to our prior practices.

Senator Murkowski. Didn't the prior practices cover financial hardship, which is really what gets ultimately to the bottom line, which is what gets——

Mr. Nichols. Well, before I address financial hardship, let me say that under the old rule, the regulatory commissions did not scrutinize the prudency of the current investment and did not scrutinize the question, is that utility pursuing the least-cost strategy until after the dollars had been spent. And we were then faced with either putting the plant in service or abandoning it. At that time, the regulatory commissions then had to make a decision.

Under the 1983 rule, the customers have the protection of a case-by-case evaluation, not only of the prudency of current expenditures, but is that company following the least-cost strategy.

I'm rather pleased, and I was pleased with Commissioner Kilmarx's answer today of what are Rhode Island's risk as regards to the abandoned plant issue, concerning the plant that she was addressing to is relatively small as compared to other New England States. Because I think we have been following a prudent approach of minimizing our risks in any single facility.

I think the longer you look at the abandoned plant issue the longer you realize that the new rule provides more protection than the version of the former approach.

Senator MURKOWSKI. Well, under the former approach, ultimately the application of CWIP could be initiated under the financial hardship theory.

Mr. NICHOLS. Yes, it could be. And that was a potential. And, as Chairman O'Connor pointed out, either only one small utility—or I think he actually indicated perhaps none, had ever been able to work its way through the labyrinth. And that's what I think of it as, it's a regulatory labryinth to prove that you're deathly ill and need help.

It's like building a maze in front of the door of the hospital emergency room, you may not be healthy enough to get through.

Senator MURKOWSKI. Well, why shouldn't CWIP be granted on a case-by-case basis where hardship can be shown?

Mr. NICHOLS. Why should it, or why shouldn't it?

Senator MURKOWSKI. Why shouldn't it; which is the old system, in effect.

Mr. NICHOLS. I think if you will analyze the financial health of the industry through the 1970's and entering the 1980's under that old rule you will answer the question. I think that's exactly the question that FERC answered in its exhausting consideration of the change in the rule. Over 200 witnesses participated in that.

I have the report of FERC at the end of that proceeding. It is a very careful piece of work. And I think the specific legislation you're considering is aimed at over turning what has been a fairly well thought-out document.

Mr. DISBROW. Senator, if I might address that issue as well.

Senator MURKOWSKI. Please.

Mr. DISBROW. By the time one reaches financial hardship the cost of capital has already risen substantially, and that prejudices the consumer longer term. And it also is a disincentive to invest in any capital intensive project, because you would like to be able to see your way clearly through a project when you undertake it. That would lead to a situation where abandonment would be a very remote possibility.

But if you don't see your way clear, and your alternative two-thirds of the way through is to try and plead financial distress to FERC and then receive a Band-Aid. I don't really consider that a prudent way of doing business from the utility point of view or from the ratepayers' point of view.

Senator MURKOWSKI. We had previous testimony with regard to the estimate of the rate impact on Rhode Island consumers of the CWIP application to FERC pending.

Do you agree with those figures, and could you clarify for the record what your own figures are for estimating that rate impact?

Mr. NICHOLS. I have looked at the numbers for our system, not for Rhode Island at all. I will happily submit those for the record.[1]

But for the typical residential customer the number that I have calculated is between 3 and 4 percent is the rate impact at this point in time.

I might mention that we're very proud at what we have been able to do as regards our electric rates in the——

Senator MURKOWSKI. Well now, excuse me. That represents a rate impact now.

Mr. NICHOLS. Yes, it does.

Senator MURKOWSKI. And I assume it—how does it relect on a savings in the future?

Mr. NICHOLS. It will result in the savings indicated by the chart on my far left, the difference between those lines.

Senator MURKOWSKI. But you can't capture that in an easily understandable offset to what is a 3 to 4 percent rate increase now as opposed to what it will be reduced over the curve of your chart?

Mr. NICHOLS. Yes, I think we can. We will have to supply that for the record.

Senator MURKOWSKI. I would suggest you might not only supply it for the record, you might go a little further and supply it for your consumers in whatever manner you use to keep them informed.

If, as you have indicated, and the first witnesses for the Regulatory Commission has indicated, that it is indeed cheaper for the long-run of the consumers in Rhode Island to be under the application of CWIP, and yet they prefer to pay more in the long-run as opposed to paying less, the return to you is the same ultimately. They're just going to pay more, and why shouldn't they have the choice of making a determination in Rhode Island if they want to pay higher rates than they have to?

Mr. NICHOLS. I would suggest that your statement of the return to us is the same in either direction is perhaps not correct.

Let me explain why. Under the AFUDC——

Senator MURKOWSKI. Let's talk about you individually. Where are you better off as a publicly owned utility?

Mr. NICHOLS. We're better off with construction work in progress in the rate base because that's in the best long-term interest of our customers.

Senator MURKOWSKI. Well, that means your financing is substantially easier and your rate structure is lower, but you're going to pass those on to the consumer anyway.

Mr. NICHOLS. OK, but let me address that question about we're the same either way, because we're not.

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[1] Not received.

Under the old regulatory funding, the allowance for funds used during construction where you deferred the recovery of those costs to a future date, what you were actually reporting on your income statement during those early years, you were reporting hypothetical earnings which you hoped to collect at a later date. I call that, quote, "a questionable IOU." And it has turned out to be a questionable IOU over a period of time, I submit, because on average our industry—and even over the past 10 years our own company has on an average very significantly less than our allowed return.

Senator MURKOWSKI. Did your accountants footnote it as a contingent asset?

Mr. NICHOLS. Our accountants, thank goodness, very carefully footnote everything.

Mr. DISBROW. Senator, I might add to that that the——

Senator MURKOWSKI. Well, I question that it's a contingent asset on your balance sheet. But anyway.

Mr. NICHOLS. It is a regulatory process whereby we have been able to regulate that. It is a not a statement that the shareholder is indifferent.

Senator MURKOWSKI. I'm not suggesting that the shareholder is indifferent. I was suggesting that under either proposal as a regulated utility, you come in with your particular request for adjustments in rate, and it's based on your demand, it's based on your capital costs associated with new plants and so forth. It would seem to me the financial return to your investor is little different.

Now, you will have an opportunity, if CWIP comes into reality, to do an actual comparison, because you have operated obviously under the existing, and you would be able to operate under the new, and your suggestion is still not clear to me as to where your investors are better off.

I understand the advantage of the financing, and so forth.

Mr. NICHOLS. The simplist answer I can give you is, a bird in the hand is worth more than the one in the future bush, particularly because practice would suggest that that one in the future bush maybe doesn't measure up to the size of the bird in the hand.

I would further suggest that the upcoming panel—I believe you have a panel of financial witnesses, I think they are in a very good position to address this same question.

Senator MURKOWSKI. Well, they want the highest return with the least risk. Isn't that right?

Mr. NICHOLS. That sounds like a commercial banker to me.

Senator MURKOWSKI. Well, you're talking to one.

Well, it seems that we still are left with the chasm of the difference of opinion as to what ultimately is in the best interest of the ratepayer, the consumer in the State of Rhode Island. And while those involved in the panel 2 with the concern over the internal regulatory responsibility they have seems to be directed into the exposures of the unknown associated with prudence, associated with the noncompletion.

Measuring that degree of risk as far as your particular responsibility of providing three-quarters of Rhode Island's power from your company alone, I think is a subject well worth considering, because that's what we're concerned with here, is measuring that unknown and additional risk that you can't really quantify.

I don't think there's any question that the previous testimony given by the attorney general, even though he was quite outspoken in his belief that all things not being equal, did acknowledge that if they were equal, but they probably wouldn't ever be, that your application and conclusion under your charts is in the best interest of the consumer. But the consumer, as we both know, has a narrower point of view, he doesn't want any rate increases at any time. And that can't be the case if he's going to continue to demand the power at the level and increasing levels the consumer will demand.

Does the CWIP in rate base reduce plant construction costs by increasing the construction utility's bond rating? And I assume it certainly does. So ultimately it would reduce costs?

Mr. DISBROW. It would be in that direction, yes.

Senator MURKOWSKI. Would a no-CWIP in rate base policy bias utility planning decisions against large-scale efficient bulk power facilities?

Mr. DISBROW. I believe they would, yes.

Senator MURKOWSKI. Does CWIP in rate base stimulate the construction of unneeded new facilities?

Mr. DISBROW. Absolutely not.

Senator MURKOWSKI. How do you, Mr. Nichols, present your particular point of view to your rate consumers in Rhode Island?

Mr. NICHOLS. We do it through many forms. We have one, and perhaps the most important one is the fact that there is some 1,500 plus-or-minus customers' employees of the system companies working in Rhode Island.

No. 2, we do it through the regulatory forums, such as the one on which Commissioner Kilmarx sits. We also do our best to communicate to our customers in every way possible not only what we're doing today, but what we're trying to do over time to ensure that our customers are receiving the lowest possible cost electricity, and making sure that that's a reliable supply as well.

I'm very proud to say that as recently as 5 years ago, and for decades prior to that, we were unfortunately supplying electricity that had a cost in the high one-third of New England, we were in the top one-third of New England with regard to class. We got those prices down, we are now in the bottom one-third of New England. We have done that in a lot of ways, and we have tried to tell our customers what we are doing. We have had a major conversion to coal programs. We built a coal-fired coal ship that actually delivers coal to New England and uses domestic fuel to move it as well as——

Senator MURKOWSKI. Where does the coal come from?

Mr. NICHOLS. The Appalachian region, West Virginia, Virginia, and Pennsylvania.

All of these things have helped to keep our price down. And I agree completely with the thought that we must do everything that we can to let our customers know the steps that we are taking to keep their price to a minimum.

But believe me, they always remind us that the most important thing is that reliable supply. And the only way that we can assure a reliable supply is to have a financially sound utility.

Senator MURKOWSKI. That's an enviable achievement. That was done without CWIP?

Mr. NICHOLS. No. It was done with a very small amount of CWIP, because under the old FERC rule, expenditures for conversion away from oil and/or natural gas were allowed CWIP treatment, as were environmental expenditures.

Senator MURKOWSKI. So your company, as far as a rating of comparative companies, has come a long way in your opinion within your region. And I assume there's some measure for measuring your performance on return on equity as well.

Mr. NICHOLS. Yes. The Attorney General addressed that very nicely for us.

Senator MURKOWSKI. Is it appropriate in your business to use your billing to mail information such as these charts in an abbreviated form to promote your particular point of view?

Mr. NICHOLS. We're very careful with that type of approach. I'm sure our commissions would want us to be very careful.

We primarily use those mailings to express to our customers things that they can do to help themselves as regards to keeping energy costs down.

Senator MURKOWSKI. Well, I understand that. But by the same token, when we take testimony from the elected representatives from the State of Rhode Island that represent the public interests and their testimony differs substantially from your point of view, it makes it much harder to deliberate on the merits of this proposed legislation. If those public officials had been supportive, why it would have been much easier for this committee to come up with some recommendations.

And it seems to me that if you could identify what the exposure is to the consumer in Rhode Island a little more dramatically or with a little more clarity—you make a good case by saying you supply three-quarters of the power and in your opinion the risk for noncompletion that would result in costs being borne by the consumer in Rhode Island for noncompleted plants is very remote.

Mr. NICHOLS. I don't think I said it was very remote. I think I said it was relatively small.

Senator MURKOWSKI. OK.

Mr. NICHOLS. But, Mr. Chairman, let me suggest that because of my dual responsibility to both customers and shareholders, you can always suggest that as the head of a large organization I will be biased in what direction I——

Senator MURKOWSKI. It's usually assumed that you're biased.

Mr. NICHOLS. I would submit that the Federal Energy Regulatory Commission went through an extensive proceeding, trying to weight all of the conflicting views.

Senator MURKOWSKI. But the consumer in Rhode Island isn't aware of that, and he's not going to read it.

Mr. NICHOLS. But the consumer was well represented in these proceedings by the able Attorney General and others. And, therefore, I would suggest that you have had an exhaustive study made by a nonbiased body.

And I think going away from their conclusion bears considerable risk

Senator MURKOWSKI. That's true, but those elected representatives of the State of Rhode Island have certainly seen fit to go away from the conclusions. They have basically the same answer you have, concern over the ratepayers in Rhode Island.

Sen. Chafee. As important an issue as Rhode Island is, obviously this is a national issue as well.

Senator **Murkowski**. Sure it is.

Mr. **Disbrow**. And I believe the concensus of FERC obviously was that this is a good thing nationally.

Senator **Murkowski**. Well, that may be true, but it may be conceived by the consumer as a free ride for industry; be it the electric utility industry or any other industry in the United States, the whole concept of the application of CWIP. You know, we have it in our State on the proposed $40 billion gas pipeline from Alaska to Canada. The CWIP application—there was tremendous reaction because of the concern over the fact that the industry will use this as an excuse to lay it on the consumer.

How you handle this educational process is your own business. It's easy for me to sit up here and generalize, I've also been on the other side of the table on generalizations, and I recognize the difficulty. But I would simply pinpoint the problem here, it's an educational problem of educating the consumer that what you propose and what FERC proposes is in the interest of the consumer. Now, whether we talk about long-term or short-term is not particularly relevant. The consumer pays the cost of doing business one way or another. And if you can make a case that the consumer is better off under CWIP, then you have got an educational process to go through and initiate.

And, you know, the same is true whether you talk about the consumer or you talk about my colleagues in the U.S. Senate who directly respond, obviously, to the consumer much more than the individuals that are representative of industry groups.

So that's another observation that I'll just leave you with, and suggest that you reflect on it. And it's too bad in this country we can't provide the flexibility to let people pay more if they want to, but that doesn't seem to be the way it is. Everything has got to be done uniformly.

Thank you very much, gentlemen. Your testimony has been, I think, most significant. And I don't know what you're going to do with your charts, but it certainly would be all right with me if you want to turn them around and let some of the witnesses see what we have seen.

Panel 4. We're getting into the Honorable Bob Bergland, executive vice president and general manager, National Rural Electric Cooperative Association; American Public Power Association, represented by Mr. Alex Radin, executive director, American Public Power Association; Mr. Louis Stroup, Jr., executive director of Kansas Municipal Utilities.

We welcome you to the committee. We are going to limit you to 5 minutes or less.

I believe it would be appropriate to introduce Mr. Bergland as former Secretary of Agriculture.

Do you know anything about growing electrical needs in Rhode Island?

Mr. **Bergland**. No, Mr. Chairman. I'm not an expert on that matter.

Senator **Murkowski**. All right. We have one pun per panel.

Are you for or against. You're for the bill. All right, I just wanted to make sure.

Mr. **Bergland**. We're for the bill, Mr. Chairman.

Senator **Murkowski**. That's fine.

STATEMENT OF BOB BERGLAND, EXECUTIVE VICE PRESIDENT, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION, ACCOMPANIED BY WALLACE TILLMAN, SENIOR REGULATORY COUNSEL; AND THOMAS BOLSCH, ATTORNEY, NORTH CAROLINA ELECTRIC MEMBERSHIP ORGANIZATION

Mr. **Bergland**. I am the executive vice president of the NRECA.

Senator **Murkowski**. Are you for the higher electric bills in Rhode Island. Is that right?

Mr. **Bergland**. We're for fair and honest treatment. We're on the side of the angels, Mr. Chairman. We are for——

Senator **Murkowski**. You sound like a true politician.

Mr. **Bergland**. We're for ample supplies of energy at the lowest possible cost.

Our association is a national service organization of nearly 1,000 not-for-profit rural electric systems serving consumer owners in 46 States.

Accompanying me on my left are Mr. Wallace Tillman, senior regulatory counsel for NRECA, and Mr. Thomas Bolsch, attorney for the North Carolina Electric Membership Organization.

First, let me express our appreciation to this committee for holding hearings on these bills and giving us a chance to comment on them.

Of our 1,000 members, 439 systems purchase part or all of their wholesale power needs from the electric utilities subject to the jurisdiction of FERC. That power represents nearly three-quarters of the operating cost of the average rural electric distribution cooperative.

Accordingly, changes in the cost of wholesale power have a direct and substantial impact on both the purchasing rural electric system and its owner-ratepayers.

We believe the Commission should examine the need for CWIP on a case-by-case basis, balancing the interests of all the affected segments of the industry and public, jurisdictional utilities, wholesale customers, and wholesale customers' ratepayers.

It has been our position from the outset that the Commission has failed to express the proper concern for balancing interests of all the parties affected by the rule, and continues to do so.

While the financial help of many jurisdictional utilities may have left something to be desired in 1980, so did, and does the financial help of other portions of the industry, rural electric and municipal systems.

Rural electric systems provide electricity under a number of disadvantages, including the highest deflective capital cost in the industry. Rural electric consumers on the average nationwide presently pay 15 percent more for electric service than consumers of privately or municipally owned systems.

Additionally, the economic recovery, so often discussed by Wall Street, has yet to reach farmers and much of the rural America in which we serve.

We believe that such facts have not been taken into consideration by the Commission.

NRECA agrees that the financial health of the industry is an extremely important matter, and that its financial health as well as the rest of the economy left something to be desired in 1980.

However, the problems of the 1970's are virtually over for privately owned utilities. It can certainly be said of few other industries that their condition has so dramatically improved over the last 3 years.

To the extent that the problem still exists, the Commission has more than adequate authorities to provide appropriate and reasonable relief; and is, in fact, using such authorities whether the financial condition or jurisdictional utilities is good or bad. However this rule will have little impact on that condition.

The CWIP rule will have a real impact on less than 10 percent of utility sales. That figure referred to the total percentage of electric sales which are jurisdictional without excluding nonfirm transactions voluntary exchanges of power.

According to 1977 data, the rule will actually impact on only about 7.6 percent of jurisdictional utilities' total revenues. Rural electric and municipal systems comprise about 5 percent of total revenues.

Generally, our members do not include CWIP in their rates, because their member owners do not approve, and the REA, Rural Electrification Administration, does not require or encourage it.

It is significant, I believe, that these systems, our own cooperatively owned generating and transmission systems, have not used CWIP, which is clearly more defensible in the case of a not-for-profit rural electric cooperative than that of an investor-owned utility.

Rural electric systems are owned by their member ratepayers; thus, there is no objectional shifting of risks from stockholders to ratepayers, nor a profit on CWIP included in the rate base.

Additionally, it should be pointed out that many of our generation and transmission systems are going in the opposite direction on CWIP . They are deferring or delaying the inclusion of plant in rate base beyond the time the plant goes on-line.

Our members have united in expressing their strong opposition to CWIP applied at the FERC wholesale level without regard to the consequences for purchasing utilities.

Too many problems are not only subjective, but are clearly identifiable at the wholesale level.

An example of the inequities created by the generic approach to CWIP is graphically pointed out in a statement by Mr. James Hull, president of the Golden Spread Electric Cooperative in Texas which I would like to submit for the record.

Senator MURKOWSKI. It will be submitted for the record following your statement.

Mr. BERGLAND. Thank you, Mr. Chairman.

While there are numerous types of situations in which a presumption favoring CWIP in the rate base would be harmful to our members, there are several circumstances which seem particularly inequitable to me and deserve some attention. I will touch on one.

The first of these occurs when a rural electric system has a generating plant of its own under construction, and is purchasing power from a utility with its own construction program ongoing, and would be required to pay wholesale rates that include the wholesale supplier's project.

Clearly in such a case, neither the purchasing utility, nor its member owners at the end of the line is going to use the facilities for which they will be billed.

After the rural electric system's plant comes online, its members must then pay for their own plant, causing them to pay twice for the same generating needs.

Mr. Chairman, we refer to this as the "double whammy." Mr. Chairman, I will close my testimony and ask that it be included in its entirety in the record.

[The prepared statements of Mr. Bergland and Mr. Hull follow:]

Statement of

BOB BERGLAND
Executive Vice President
of the

NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

Before the

Subcommittee on Energy Regulation
Senate Committee on Energy and Natural Resources

on

S.1069, S.817, and H.R.555

April 12, 1984

My name is Bob Bergland. I am Executive Vice President of the National Rural Electric Cooperative Association (NRECA), the national service organization of nearly 1,000 not-for-profit rural electric systems serving consumer-owners in 46 states. Accompanying me today is Wallace F. Tillman, Senior Regulatory Counsel for NRECA.

Let me first express my appreciation and that of our member systems for the opportunity of participating in today's hearing on S.1069, S.817 and H.R.555, bills to limit the circumstances under which construction work in progress (CWIP) will be permitted in the rate base of utilities subject to the jurisdiction of the Federal Energy Regulatory Commission (FERC). I would also like to thank Senator Chaffee, who introduced S.1069, and Senator Metzenbaum, who introduced S.817, and the cosponsors of these bills.

Of NRECA's 1,000 members, 61 are generation and transmission (G&T) cooperatives. Forty-six G&Ts actively generate and transmit wholesale bulk power to their distribution member-owners and 15 others basically act as purchasing and/or transmitting agents for their member distribution systems. There are 902 distribution system members of NRECA that purchase their power from generating utilities. Overall, 40% of the energy input of rural electric systems comes from their own G&Ts, 28.6% from investor-owned utilities, 21.2% from federal agencies, and 10.2% from other public agencies. 439 member systems purchase a part or all of their wholesale power needs from electric utilities subject to the jurisdiction of FERC (See Attachment A). Purchased power represents nearly 75% of the operating cost of the average rural electric distribution cooperative. Accordingly, changes in the cost of wholesale power have a direct and substantial impact on both the purchasing rural electric system and its owner-ratepayers.

FERC CWIP RULE

On May 16, 1983 FERC issued a final rule which went into effect on July 1, 1983, altering established policy and historic precedent by permitting utilities under its jurisdiction to file for rates that automatically include a return on 50% of their investment in plant under construction. For the past seven years FERC has allowed a return on CWIP for 100% of pollution control and fuel conversion facilities and it will continue this practice under the rule. It has also allowed a return on CWIP for other construction when it was shown that the utility was in "severe financial difficulty." FERC has now decided to eliminate the showing of need and to automatically provide a return on CWIP which, when added to the 100% for pollution control and fuel conversion CWIP, is more than the 50% figure so frequently discussed. Twelve privately-owned utilities have already applied for over $100,000,000 in CWIP-related rate increases.

History of the CWIP Rule

The FERC rule was initially proposed "to amend its regulations regarding the inclusion of construction work in progress (CWIP) in the rate base of public utilities to relieve severe financial difficulty." (emphasis added) The proposal suggested that a utility include CWIP in rate base if (1) the company had its bonds rated no higher than "Baa" by Moody's or "BBB" by Standard & Poor's, and (2) if the amount of company CWIP -- under FERC jurisdiction -- which is excluded from the utility's wholesale rate base exceeds 40% of that rate base.

NRECA participated in every phase of the CWIP proceedings and recognized the need for the Commission to maintain the CWIP option for utilities in severe financial distress. However, NRECA urged the Commission to reject proposals to automatically allow CWIP in rate base for all utilities regardless of their financial condition. (The suggestion that CWIP be automatically added to rate base came late in the proceedings giving little opportunity for assessment or comment.) NRECA also urged the FERC to amend its existing procedures in a manner that would assure the maintenance of a competitive environment in the electric utility industry and equitably treat both current and future ratepayers. NRECA believes the Commission should continue to examine the need for CWIP on a case-by-case basis, balancing the interests of all the affected segments of the industry and public -- jurisdictional utilities, wholesale customers and the wholesale customer's ratepayers.

Financial Considerations

Even though the Commission attempts to disavow any correlation between its final rule and financial concerns for jurisdictional utilities, the rule most certainly grew out of FERC hearings and concerns for the "financial health of the industry." In fact, as previously quoted, the first sentence of the Notice of Proposed Rulemaking issued July 27, 1981 expresses such concern and focuses the proposed rule on relief for financial distress.

It has been the position of NRECA from the outset that the Commission has failed to express the proper concern for balancing the interests of all the parties affected by the rule and continues to do so. While the financial health of many jurisdictional utilities may have left something to be desired in 1980, so did and does the financial health of other portions of the electric utility industry -- rural electric and municipal systems. As can be determined from Attachment B, prepared by Donald E. Smtih, Chief Economist for NRECA, rural electric systems provide electricity under a number of disadvantages, including the highest effective capital cost in the industry. Rural electric consumers also on the average nationwide presently pay 15-percent more for electric service than consumers of privately- or municipally-owned systems. Additionally, the economic recovery so often discussed by Wall Street has yet to reach farmers and much of rural America which we serve. We believe such facts have been ignored in the Commission's rule, which concerns itself only with investor-owned utility interests.

NRECA agrees that the financial health of the industry is an extremely important matter, and that its financial health, as well as the rest of the economy, left something to be desired in 1980. However, the problems of the 1970's are virtually over for privately-owned utilities. It can certainly be said of few other industries that their condition has so dramatically improved over the last three years, as has been the case for these utilities. To the extent that the problems still exist, the Commission has more than adequate authorities to provide appropriate and reasoned relief and is in fact using such authorities by increasing rates of return, making tax normalization changes, using future test years and permitting automatic fuel adjustment clauses, to cite but a few examples. Whether the financial condition of jurisdictional utilities is good or bad, however, this rule will have little impact on that condition. Regardless of this fact, the Commission has adopted a rule which, while having little if any impact on the financial health of the jurisdictional utilities, will have a real and significantly adverse impact on other segments of the industry that can ill afford additional hardships -- rural electric and muncipal systems.

As evidence of the limited impact, let me quote from the April 18, 1983 issue of Fortune, hardly a magazine that could be accused of having a consumer bias: "The FERC decision was so mild as to make little difference, and so long in coming that the crisis it was meant to solve has largely passed." The article further points out that, "Since 1979 the industry's average return on equity has jumped from about 11% to 14%, thanks to better cost controls, record rate hikes from state utility commissions, and a falloff in new plant construction." Finally, the article notes that if the industry "really did need CWIP, FERC's decision -- which affects only wholesale power, or 10% of all electric sales -- wouldn't help much."

Fortune magazine is not alone in its views. Recent reports on the investor-owned segment of the industry indicate that the majority of the industry is "very healthy." Mr. Anthony D. Osbon, Vice President and Director of Utility Scope Services at Argus Research Corporation, recently stated in a roundtable discussion for the Wall Street Transcript that "the industry is in pretty good shape" and that,

> "...a number of utilities are becoming what we euphemistically like to call cash cows, and these companies will have opportunities to do things with money in the future that hasn't been available in a long, long time. ... the seemingly perennial lack of sufficient rate increases in recent years is no longer the significant problem that it was, and the combination of smaller capital needs, lower inflation, and great cash flow make for a pretty good future for numerous companies."

While Mr. Osbon indicated a problem still existed with utilities building nuclear power plants, there is little FERC can do about this.[1]

In the same roundtable discussion, Mr. Evan Silverstein, Senior Analyst and Vice President, Research, at L.F. Rothschild, Unterberg & Towbin, stated,

> "If you look at the problems of the 1970's, they were made mostly from gigantic needs for price increases to support the fundamentals of the industry. I think looking at it from a cash flow standpoint and other factors, it's very hard to envision (leaving out nuclear) certain companies experiencing severe fundamental deterioration going forward. In my mind, the question now is at the margin what kind of profitability you'll see for these companies."

The CWIP rule will have a real impact on even less than the 10% of utilities sales figure projected by Fortune. That figure referred to the total percentage of electric sales which are jurisdictional, without excluding nonfirm transactions -- voluntary interchanges of power. According to 1977 data, the rule will actually impact on only about 7.6% of jurisdictional utilities' total revenues -- rural electric and municipal systems comprise about 5% of total revenues.[2] This conclusion is reached by multiplying the percentage of total industry revenue due to FERC jurisdictional sales by the percentage of those FERC jurisdictional sales which represent firm power sales to partial and total requirements customers. ("Statistics of Privately Owned Electric Utilities in the United States 1977," published by the U.S. Department of Energy in January of 1979. After 1977 this publication no longer included data on sales of firm electric power for resale to partial and total requirements customers.) Further, our calculations indicate that applying FERC's calculation of the revenue impact of the CWIP rule to the 7.6% jurisdictional revenues, the net impact for half of the privately-owned utilities will be less than one quarter of one percent of their total revenues.

No matter what data is examined, however, it is readily apparent that the CWIP rule will do little if anything for the balance sheets of jurisdictional utilities. It could hardly, then, reduce a utility's "bias against investment in additional plant," as asserted by FERC in the final rule. Additionally, given the current electric utility reserves, it can hardly be seriously argued that there is a bias against investment. The rule will, on the other hand, have a substantial impact on many wholesale customers. As previously noted in my testimony, purchased power accounts for nearly 75% of the operating cost of the average rural electric system -- even more in some instances. Accordingly, changes in wholesale power costs such as those that will result from the CWIP rule have in many cases a direct and substantial impact on both the purchasing utility (its competitive viability) and its owner ratepayers. We estimate the total dollar impact to be over $100,000,000 annually on rural electric cooperatives, but the real impact must be examined on a system by system basis, not a nationwide basis.

Problems Peculiar to Utility Wholesale Purchasers

There are numerous questions raised about CWIP from a public policy or philosophical point of view. Some of these questions include the appropriateness of violating the principle of not paying for plant not yet "used and useful," whether such plant will ever in fact be completed, especially in the case of nuclear plants, whether the ratepayer will move away or otherwise not evar use the plant in question, whether overbuilding will be encouraged, whether CWIP inappropriately shifts investment risks from stockholders to ratepayers, and whether wholesale customers should have to pay for plant such as transmission lines which the utility refuses to let them use. There are, of course, countervailing points that have been raised in support of CWIP, such as avoiding rate shock when a plant goes on line, sending proper price signals to consumers, avoiding a bias against plant investment, etc. While our members have not been totally united in their position on the generic concept of CWIP, generally they do not include CWIP in their rates because their member-owners do not approve and the Rural Electrification Administration (REA) does not require or encourage it. It is significant, I believe, that these systems have not used CWIP, which is clearly more defensible in the case of a not-for-profit rural electric cooperative than in that of an investor-owned utility. Rural electric systems are owned by their member ratepayers; thus there is no objectionable shifting of risks from stockholders to ratepayers, nor a profit on CWIP included in the rate base. Indeed, if a cooperative ever included CWIP in rate base it would be only after its board of directors, duly elected by the owner-ratepayers, had authorized such action. Additionally, it should be pointed out that many G&T systems are going in the opposite direction on CWIP. They are deferring or delaying the inclusion of plant in rate base beyond the time the plant goes on line. In fact, REA will soon publish a proposed rule in the Federal Register for comment that would permit cooperatives to study and utilize depreciation methods other than straight-line depreciation. The effect would be to permit G&Ts to defer or utilize a depreciation method that limits the amount of plant included in rate base even after the plant goes on line.

NRECA's members have united, however, in expressing their opposition to CWIP applied at the FERC wholesale level without regard to the consequences for purchasing utilities. Too many problems are not only subjective but are clearly identifiable at the wholesale level. Furthermore, the inequities are so statistically likely to occur that there can certainly be no justification for shifting the presumption against CWIP and the burden of proving harm from jurisdictional utilities to their customers, as will be the case under the rule where CWIP will be granted automatically subject to refund. To respond as FERC does that these potential inequities may be brought up in rate cases is of little comfort to a business entity threatened with immediate and adverse consequences. It is not at all unusual for such rate cases to fail to be resolved for many years. A possible refund of unjustified rate increases a number of years down the road is of little solace to the small electric utility or its individual retail customers fighting for survival. Given the obvious consequences of this rule for small entities, how the FERC included a "Certification of No Significant Impact on a Substantial Number of Small Entities" in the Notice of Proposed Rulemaking remains quite a puzzle, especially since concerns about the impact on small business entities were expressed during the FERC proceedings by the Small Business Administration.

While there are numerous types of situations in which a presumption favoring CWIP in rate base at the wholesale level will be harmful to NRECA's member systems, there are several circumstances which seem particularly inequitable to me and deserve some discussion.

The first of these occurs when a rural electric system has a generating plant of its own under construction, is purchasing power from a jurisdictional utility with its own construction project ongoing, and would be required to pay wholesale rates that include the wholesale supplier's project. Clearly in such a case neither the purchasing utility nor its owner-members at the end of the line is going to use the facilities for which they will be billed. After the rural electric system's plant comes on line, its members must then pay for their own plant, causing them to pay twice for the same generating needs. This is frequently referred to as the "double whammy." Such situations occur in a number of states, including but not limited to Kansas, Georgia, New Hampshire, New Mexico, North and South Carolina.

Specific language is included in H.R.555 to deal with this situation, but is not included in S.1069. We would urge the subcommittee to consider the House language which limits the amount of CWIP as follows:

> (4) upon certification by a customer of such public utility that a facility, or portion thereof, the costs of which are proposed to be included in rate base by such public utility will not be used to serve such customer or will provide service to such customer for only a fraction of such facility's useful life, the Commission shall limit the increase of rates to such customer attributable to the inclusion of such facility in such public utility's rate base to an amount that is just and reasonable in light of the facts of the situation;

The second situation that is particularly troublesome is frequently found in states where public utility regulatory bodies do not permit the inclusion of CWIP in retail rate base. Because of the FERC rule permitting CWIP in wholesale power rates, only those customers of cooperative and muncipal systems will pay for CWIP in their retail rates in those states. The situation is unjust on its face and will clearly increase the likelihood of a "price squeeze." In a price squeeze the wholesale rate either exceeds the rate at which the supplier sells power at retail, or is so close to the supplier's retail rate as to prevent the wholesale customers from effectively competing for retail loads. Under either circumstance the likelihood is increased that the member-owners of rural electric systems will become discontented and pressure will be exerted to recall boards of directors, management, and/or to sell the cooperative to the utility that created the dilemma. In some parts of the country, cooperatives compete with other utilities directly for retail load, and there are recorded cases of individual cooperative customers changing suppliers because a lower price was charged by the neighboring privately-owned utility.

Clearly the Commission, in adopting a rule which creates such anticompetitive situations, has failed in its affirmative obligation to insure that its actions do not have unwarranted anticompetitive effects. Potential price squeeze situations exist in Georgia, Montana, Texas and Kansas, to name but a few states. In several of these states both circumstances just discussed will exist -- price squeeze and paying for plant twice (double whammy).

Finally, I would like to mention that the rule has the potential to tie wholesale purchasers to the investor-owned utility. The inclusion of CWIP in the wholesale rates will make it economically difficult for a purchasing utility to enter into agreements to provide its own generating facilities or to change suppliers. Not only are there anticompetitive consequences under such a scenario but there is a danger that there will be no power for the wholesale customer if it foregoes the option to build its own plant. In spite of all the rhetoric during the CWIP debate at FERC about a "public utility obligation" for wholesale suppliers to serve, there is no such obligation to serve wholesale customers under the Federal Power Act. In fact, there are tariffs on file at the FERC by jurisdictional utilities that state that specific additional cooperative load will be served only if the company agrees. Furthermore, such tariffs provide that the company will not provide more capacity and energy at existing points of delivery, but may require the customer to build extended transmission facilities to obtain additional service.

CWIP at the State Level

Informally, many jurisdictional utility representatives have conceded that CWIP in wholesale rates at the federal level will do little if anything to improve company financial conditions. Why then do they fight so hard for CWIP at the wholesale level? Is it because they hope that state public utility commissions will follow the lead of FERC and permit more CWIP in retail rates at the state level? Or is it to prepare a more favorable regulatory climate in anticipation of restructuring themselves to circumvent effective state rate regulation, by setting up holding companies and/or spinning off generation? Changes in the Public Utility Holding Company Act are presently pending before Congress and a number of utilities, including Virginia Electric & Power Co., are actively discussing spinning off their generation.

NRECA submits that there is absolutely no factual basis for believing that what FERC does on this issue will have any effect whatsoever on state regulatory authorities. In fact, the states appear to be moving in the opposite direction. The most recent survey conducted by the National Association of Regulatory Commissioners (NARUC) indicated that "Twelve states have legislation currently pending which would prohibit or otherwise limit the inclusion of construction work in progress (CWIP) in rate base." In contrast to these 12 states, only Kansas had a bill which would require the inclusion of CWIP in the rate base -- that bill never got out of committee. The State of Missouri footnoted their response by indicating that CWIP in the rate base is prohibited as per a 1976 rates initiative. Additionally, the state of Pennsylvania noted that legislation prohibiting CWIP was passed during the 1981-82 session.

Additionally, other NARUC data[3] indicates the extent to which states authorized inclusion of CWIP in rate base in 1982. This data, however, gives a very incomplete picture. Our own informal survey indicates that while approximately 11 states appear to allow unlimited CWIP in the rate base, most of the public utility commissions in those states have not in fact been automatically granting it, for example Georgia and Texas. Thus, the data is only an indication of what is permitted by state law, not in fact what is occurring. Furthermore, it is clear that the majority of states which permit any CWIP at all do not, as proposed by FERC, automatically allow its inclusion.

H.R. 555, S.1069, and S.817

Again, let me express my appreciation to the Congressional sponsors and co-sponsors of S.1069, S.817 and H.R.555, all bills which would redress the inequities of the FERC rule. Our members addressed the need for legislation to overturn the FERC rule on January 25, 1984, when about 9,000 people from 46 states attended our 42nd annual meeting and adopted the following resolution.

NRECA Resolution on

CONSTRUCTION WORK IN PROGRESS

The Federal Regulatory Commission (FERC) has issued a rule allowing some of the costs of construction work in progress (CWIP) to be included in wholesale rates. In doing so, FERC has relinquished its regulatory responsibility to review each CWIP application and make a determination in each case based on certain findings relating to financial need. While providing little meaningful assistance to utilities, this action could place significant financial burdens on more than 450 rural electric systems, jeopardizing their financial integrity and competitive viability.

Congress is now considering an amended version of Rep. Tom Harkin's (D-Iowa) legislation, H.R. 555, which if enacted, would alleviate many of the inequities resulting from the FERC rule. H.R. 555, as amended, would restrict CWIP charges to those cases where FERC finds the utility to be experiencing cash flow difficulty or "severe financial difficulty." In both cases, the bill requires FERC to consider whether a wholesale customer would be placed in an anti-competitive situation; whether the wholesale customer would actually be using the power produced from future construction; and whether the utility has engaged in sound management practices and has pursued appropriate conservation and least-cost approaches to future power supplies.

NRECA staff is encouraged to continue legal and regulatory efforts to overturn the FERC ruling. Congress is urged to support legislative efforts to alleviate the inequities of the FERC rule.

Subsequent to the adoption of this resolution, H.R.555 passed the House of Representatives on February 8, 1984 by the impressive margin of 288-113. With the exception of language requiring that FERC consider whether the wholesale customer is building its own plant, as noted earlier in my testimony, both S.1069 and H.R.555 address the concerns of NRECA's membership by providing for a reasoned, thoughtful and most importantly case-by-case approach to CWIP in wholesale rate base. Both bills also recognize that CWIP is an extraordinary relief and permit its inclusion in rate base under appropriately defined circumstances. All the bills continue to permit, we think most generously, the inclusion of 100% of CWIP in the rate base of jurisdictional utilities for "(1) the costs of any pollution control facility; and (2) the costs of conversion of oil or natural gas-fired facilities to the use of fuels other than oil or natural gas." Additionally, full CWIP is authorized as speedily as possible under S.1069 and H.R.555, for jurisdictional utilities that can show severe financial difficulty, that CWIP will alleviate such hardship, and otherwise comply with the bills.

While NRECA's membership has not expressed a great deal of concern about the potential for CWIP to result in overbuilding or to provide an unfair advantage to central station electricity, the measures outlined in S.1069 and H.R.555 requiring a detailed assessment of "alternate means of meeting demand for electric energy-related energy services at least system cost..." are completely consistent with the procedures our members must go through at REA before obtaining a guaranteed loan to build generation and/or major transmission facilities.

In conclusion, let me note that S.1069 and H.R. 555 are in accordance with the position taken by NRECA during the comment period on the CWIP rule. It assures the maintenance of a competitive environment in the electric utility industry, the equitable treatment of both current and future ratepayers, and a timely regulatory response to electric utilities that are subjected to financial distress associated with construction programs that cannot be alleviated in any other manner.

We appreciate the opportunity of participating in today's hearing and expressing our support for S.1069 and H.R.555.

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[1] Ironically, FERC policy offers the least to those in the most trouble -- utilities building nuclear plants. Since 100% of CWIP is offered for oil and gas conversion to coal and for pollution control equipment which can comprise as much as 25% of coal plant construction costs, it is those with the least need which are rewarded with the most CWIP.

[2] Sales for resale as a percentage of total electrical sales have remained constant in recent years. Thus, it can be presumed that these percentages are currently appropriate.

[3] 1982 Annual Report on Utility and Carrier Regulation, National Association of Regulatory Utility Commissioners, Washington, D.C., p. 454.

ATTACHMENT A

LIST OF COOPERATIVES THAT PURCHASE FIRM WHOLESALE POWER FROM UTILITIES subject to FERC jurisdiction

STATE	Number of Co-ops by State Directly Purchasing Jurisdictional Power
Alabama	3
Alaska	0
Arizona	1
Arkansas	6
California	2
Colorado	4
Delaware	1
Florida	11
Georgia	3
Idaho	0
Illinois	19
Indiana	6
Iowa	0
Kansas	32
Kentucky	2
Louisiana	2
Maine	2
Maryland	2
Massachusetts	0
Michigan	6
Minnesota	2
Mississippi	2
Missouri	4
Montana	2
Nebraska	0
Nevada	2
New Hampshire	1
New Jersey	0
New Mexico	7
New York	0
North Carolina	25
North Dakota	2
Ohio	1
Oregon	1
Oklahoma	8
Pennsylvania	1
South Carolina	6
South Dakota	2
Tennessee	0
Texas	41
Utah	1
Vermont	2
Virginia	14
Washington	2
West Virginia	1
Wisconsin	8
Wyoming	0

Total Co-ops 237

Less G&Ts -22

Total Distribution Co-ops that are direct wholesale purchasers from power companies..............................215

G&T Cooperatives that purchase firm power for resale from jurisdictional utilities and are concerned with FERC jurisdiction over sales for resale. This list also includes (marked by *) those G&T cooperatives interested in FERC transmission, interconnection authority, etc. and those with only limited concern for FERC jurisdiction (marked with **).

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1. Alabama Electric Co-op	AL-42	16
2. Allegheny Electric Co-op	PA	14
3. Arkansas Electric Co-op *	AR	17*
4. Brazos Electric Power G&T	TX 121	19
5. Buckeye Power Corp. *	OH	29*
6. Cajun Electric Co-op *	LA	13*
7. Central Elec. Power Co-op	SC-50	15
8. Central Montana Electric G&T	MT 41	13
9. Colorado-Ute Elec. Assoc. **	CO	14**
10. Cooperative Power Assoc. *	MN	18
11. Deseret G&T Cooperative	UT 21	6
12. Oglethorpe Power Co-op	GA 109	39
13. Plains Electric G&T	NM 18	12
14.. Seminole Electric Co-op	FL 41	11
15. Sunflower Cooperative	KS 53	8
16. United Power Association *	NM	15*
17. Wabash Valley Power Assoc.	IN 107	24
18. Western Farmers Elec. Co-op	OK 32	19
19. Western Illinois Power Co-op	IL 51	7
20. Wolverine Electric Co-op	MI 46	7
		210 /92* /14**
	G&Ts	14 5 1

A-

There are 14 generation and transmission cooperatives serving 210 distribution cooperatives that purchase power from jurisdictional utilities and are concerned with FERC rate authority over sales for resale.

There are 5 generation and transmission cooperatives, that serve 92 distribution cooperatives, that are only interested in FERC jurisdiction over transmission, interconnection and emergency procedures.

There is one generation and transmission cooperative that serves 14 distribution cooperatives which has only a limited concern with FERC matters.

G&T Cooperatives		Distribution Co-ops Served
14	FERC rate authority	210
5	transmission	92
1	limited concern	14
20 total		316 total

There are 215 distribution cooperatives that purchase their power for resale directly from investor owned utilities. Thus, the number of RECs concerned with FERC ratemaking authority over purchases for resale is 14 G&Ts + 210 G&T distribution members + 215 distribution system direct purchasers from jurisdictional utilities = 439.

If the RECs with only an interest in transmission matters (97) plus those with only limited concern (15) are added to the 439 RECs, a number of 551 is reached.

ATTACHMENT B

INDUSTRY COMPARATIVE DATA*

	Rural Electric Co-op	Publicly-Owned	Investor-Owned
Federal Assistance ($ Millions)	83 1/	331	3,600 2/
Financial Assistance per consumer (annual $)	$8.91	$40.45	$50.70
Average Interest Rate	13.50%	12.00%	15.25%
Effective Capital Cost 3/	13.5%	12.0%	12.9%
Borrowed Capital, % of Total 4/	94%	85%	48%
Investment in Distribution Plant per Consumer	$1,337	$648	$825
Consumers per Mile of Line	4.7	77.5	35.8
Revenue per Mile of Line	$3,370	$68,128	$42,007

1981 Data

1/ OMB calculation of REA insured rate less market rate times loan level.

2/ Retained tax benefits.

3/ Reflecting federal assistance.

4/ Proportion of capital financed and not internally generated (from depreciation, retained earnings, tax benefits).

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* Reprinted from "Comparing Capital Costs: Federal Assistance to Electric Utilities" Donald E. Smith, NRECA Chief Economist.

STATEMENT OF JAMES HULL
ON BEHALF OF
GOLDEN SPREAD ELECTRIC COOPERATIVE

My name is James Hull, and I am the President of Golden Spread Electric Cooperative, Inc. Golden Spread is a new Generation and Transmission Cooperative established by certain distribution cooperatives that purchase all or part of their electric power requirements from Southwestern Public Service Company, which is headquartered in Amarillo, Texas. The members of Golden Spread serve electric loads in Panhandle Texas, Oklahoma, and New Mexico. The areas served by the members of Golden Spread are sparsely populated, and the loads are very much related to the agricultural economy. In fact, approximately 20% of the irrigation loads served by rural electric cooperatives in the United States, are served by members of Golden Spread.

Golden Spread was established by its members to explore means of assuring that its members, and their rural customers have adequate supplies of economic electric power now and in the future. The irrigation usage of retail end users supplied by Golden Spread's members makes long-term power supply planning critical.

Golden Spread also is deeply concerned with the current price of electricity, and the implications that large increases in rates will have to its members and their customers. CWIP is a particularly sensitive issue, both due to the fact that Golden Spread will evaluate alternative power supply arrangements to those that are now in place, and the fact that the immediate price impact of including CWIP in rate base could have a serious, and perhaps irreversible, adverse impact on rural consumers of electricity.

Golden Spread supports legislative efforts to set aside the Federal Energy Regulatory Commission's change in its regulatory policy towards the inclusion of CWIP in rate base. The FERC's policy totally ignores any rational balancing of interests between wholesale customers and their retail end users and the needs of electric utilities. The insensitivity of the FERC's CWIP policy is illustrated, we believe, by the type of rate filing we expect to experience in the next few months.

On April 10, 1984, Golden Spread was advised by Southwestern Public Service Company ("SPS") that the Company would be filing for an increase in rates of approximately $12,000,000. We have not seen any detailed studies concerning the financial condition of SPS, but widely published financial reports indicate that the Company is earning a return on equity in excess of 20%, and its common stock is selling well above book value. In other words, SPS cannot readily be characterized as a utility in any semblance of financial distress. Yet, SPS has advised Golden Spread and its members that the Company will seek to include CWIP in wholesale electric rate base.

We also have been advised that SPS does not intend to seek retail rate relief from the Texas Public Utilities Commission, which regulates the majority of the Company's sales. It is our understanding that no CWIP is now included in retail electric rate base. Consequently, we may face a serious cost/price squeeze as a result of the Company's inclusion of CWIP in wholesale electric rate base.

The requirement that Golden Spread members invest substantial amounts of money in the construction of generating plant to which they have no property interest and consequently no assurances of reasonably priced electricity in the future also is unreasonable when there is no clear financial need for such a contribution. The result of the Commission's CWIP policy may, in the long term, foreclose for existing wholesale customers viable power supply alternatives, and definitely will reduce or extinguish entirely the inclination of FERC jurisdiction utilities to consider allowing wholesale customers to become joint owners in power plants. In fact, Golden Spread and its members have been advised unequivocally by SPS that the Company does not intend to allow joint ownership in any of its future plants. Prior to the promulgation of the Commission's new policy, SPS had indicated that it would consider joint ownership.

For all of these reasons, Golden Spread urges that the Committee and the Senate act in conjunction with the House of Representatives to pass legislation that will restore some semblance of balance to the interests of wholesale customers and utilities regulated by the Federal Energy Regulatory Commission on the issue of including Construction Work In Progress in wholesale electric rate base.

Thank you.

James Hull/FK

James Hull

Senator MURKOWSKI. I thank you.

I would ask the next witness, who is Mr. Radin to proceed. This is Mr. Alex Radin, executive director, American Public Power Association.

STATEMENT OF ALEX RADIN, EXECUTIVE DIRECTOR, AMERICAN PUBLIC POWER ASSOCIATION, ACCOMPANIED BY FRED RITZ, COUNSEL; AND J. BERTRAM SOLOMON, CONSULTANT

Mr. RADIN. Thank you, Mr. Chairman.

I very much appreciate the opportunity of appearing here today.

Our association represents, primarily municipal-owned electric utilities.

I'm accompanied here today by Fred Ritz, who is counsel to the American Public Power Association, and Bertram Solomon, who is a consultant to the association on this matter.

My prepared statement shows a number of reasons why we are in favor of the subject legislation and opposed to the recent CWIP rule.

I'd like to confine myself to mentioning four different aspects of the present situation, which we think calls for the passage of the legislation such as has been adopted by the House and is now before this committee.

The first point I'd like to make is the need for a case-by-case approach. Although there are variations in the financial condition of individual utilities, FERC new policy makes no distinction of the individual companies on an across-the-board basis to all utilities regardless of the showing of financial need.

Mr. Chairman, there's been much said here today about the fact that this is not an automatic procedure, but we feel in substance it is automatic because of the question of whether or not there's financial need of utilities to receive this sort of relief is not addressed in the rule. They automatically get the 50-percent CWIP. And the so-called prudency test, as I read the rule, is almost an after thought. And we do not see that there are really stringent requirements for the Commission to consider prudency.

Second, the question of financial problems of the utilities is an issue that I think needs to be addressed.

Although the Commission based its action in large part on alleged financial problems of the electrical industry, an abundance of evidence on the utility industry itself, and the financial analysts indicate that for the most part the industry is in a healthier financial condition.

I'd like to just read one quote of a representative of Blythe Eastman Paine Webber, Thomas Kilburn, who wrote as recently as February 1984. "Faced with reduced construction expenditures, more normalized fuel costs, the diminished load growth, many utilities must learn how to manage prudently businesses that, for the forseeable future, will be cash cows."

The third point I'd like to make is that the new rule creates serious financial and competitive problems for the more than 900 local publicly owned utilities, primarily municipal systems, which purchase some or all of their power wholesale from private utilities subject to FERC regulations. And this applies also to the Rural Electric Cooperatives.

The CWIP rule hits these municipal utilities hard financially, yet provides relatively little relief for the average power companies.

The wholesale power costs represent as much as 100 percent of the bulk power costs to many of the public systems, but the revenues received by the power companies from wholesale sales are only about 11½ percent of their total revenues, because most of their income comes from retail sales. That 11½ percent figure is a generous figure. Mr. Bergland used the figure of less than 10 percent, and I think that's probably more accurate. He included nonfirm sales.

So CWIP really provides very little relief for the industry as a whole, but it socks us hard to the extent of as much as 100 percent of our wholesale power cost.

The competitive implications of the rule are equally as troublesome. The wholesale customers are being charged at least 50 percent of the supplier's CWIP costs automatically, and these costs must be passed along to their retail ratepayers. However, as the FERC liberalizes its CWIP policies, the State regulatory commissions are moving in the opposite direction, and increasing the number of—or inhibiting or severely restricting the use of CWIP in retail rates.

Municipal utilities and their wholesale customers are thus prevented from competing effectively at the retail level with their suppliers because these companies cannot charge CWIP to their retail customers while the wholesale customers must pass along to their retail customers the cost of CWIP.

This problem is referred to as price squeeze, and that problem has been before the Commission for many, many months if not years, and the Commission has yet to have done anything effectively to cure the price squeeze problem. In fact, FERC was just castigated by the U.S. Circuit Court of Appeals by the D.C. Circuit for failing to provide a relief in a price squeeze situation.

And finally, Mr. Chairman, I think a very important point that relates to much of the previous testimony here is that these analyses that have been presented in charts all have a very important, if not fatal flow in that they do not take into account the time value of money. And there is a very importance of time value of money that is not considered here and, in fact, that the FERC itself acknowledged this point in its order.

If I may, Mr. Chairman, we have a couple of charts here ourselves that I would like to display for you, and have Mr. Solomon, who has worked up these figures, show these charts to you, and explain the flaw in the previous charts that have been presented.

This is Mr. Solomon that will be doing this. These are two charts here that will show you the importance of the time value and why that's been ignored in all the previous charts and why that distorts the information that's been presented to you.

Mr. SOLOMON. Mr. Chairman, my name is Dave Bertram Solomon.

This morning you asked a number of very good questions concerning the cost to the consumer of including the CWIP regulation and why the utilities have not been able to convince the consumer that indeed their proposals included CWIP in the rate base is cheaper for them.

I'd like to clear that up at this time.

Senator MURKOWSKI. I would like you to, too. Good luck.

Mr. SOLOMON. Let me state first that Chairman O'Connor referred to the fact earlier this morning that it was his opinion that CWIP was cheaper for consumers, as did the representatives of the EEI.

What I have done is prepare two charts which will clarify the situation. The first chart is one which essentially duplicates the information which the Edison Electric Institute, or EEI, widley distributed. And as Mr. Radin has pointed out, it contains one very important flaw, and that is that it does not recognize the time value of money to consumers. What they have done is recognize that money has a time value to investors, because in preparing thenumbers, they included a 10 percent rate of return to investors. However, they did not recognize the time value of money to the individual consumers.

What this chart shows is that during the early period of construction on the building of the plant, there are certain amount of revenues which are required if CWIP is placed in the rate base. These are the red lines for the first 7 years, which is the contruction period. It then shows that during the remaining service life, the 30-year service life of the plant, that the revenue requirements, which are shown by the blue lines, are higher during that period of time if CWIP is not included in the rate base.

Certainly, I do not want to keep this from the subcommittee's view, and, again, I have produced exactly what they have submitted.

However, what I would like to do now is turn to the chart which I have produced as well, which does indeed take into consideration the fact that money does have time value to consumers. And that, I would stress, is the only thing that I have changed from the EEI presentation.

What this chart shows is very different and indeed shows including CWIP in the rate base is not less costly for consumers, but is indeed more costly to the consumers, if you do take into consideration the time value of money to consumers.

Senator MURKOWSKI. Let me ask you a question. Your chart assumes what percentage of CWIP?

Mr. SOLOMON. The chart that has just been placed before you changes only one thing again from the EEI presentation.

Senator MURKOWSKI. Well, FERC allows what percentage?

Mr. SOLOMON. FERC allows 50 percent, not including——

Senator MURKOWSKI. Is yours 100 percent then?

Mr. SOLOMON. It's 100 percent.

Senator MURKOWSKI. Aren't you overstating it?

Mr. SOLOMON. It certainly would be overstating the difference, but there still would be a difference which the relative magnitude would be slightly different.

Senator MURKOWSKI. Yes, but yours allows 100 percent, and FERC allows 50 percent. So are you comparing apples and apples?

Mr. SOLOMON. I'm doing two things.

Senator MURKOWSKI. Well, yes or no?

Mr. SOLOMON. I am comparing, I think, apples and apples.

Senator MURKOWSKI. You're comparing 100 percent with 50 percent.

Mr. SOLOMON. No. I'm comparing no CWIP at all with 100 percent AFUDC. And the relationships would be the same on the 50 percent whether you include it or——

Senator MURKOWSKI. You were pretty clear up until now. Now you're getting cloudy.

Mr. SOLOMON. Pardon?

Senator MURKOWSKI. Your testimony was pretty clear up until now, and now it isn't.

Mr. SOLOMON. OK, let me try and clarify. Maybe I should answer your question yes on comparing 100 percent with no CWIP. The FERC rule is to include 50 percent.

Senator MURKOWSKI. Why aren't you comparing with the FERC rule?

Mr. SOLOMON. I am not comparing with the FERC rule because I had hoped to be able to keep this very simple and straight forward.

Senator MURKOWSKI. Well, I thought you were going to come up with the answer to all our problems. Go ahead.

Mr. SOLOMON. Well, the difference would apply still, Mr. Chairman, to that part of the CWIP which is either not in the rate base, the half that is not in the rate base and the half that is in rate base.

I have shown essentially both alternatives. Now, if I were to show a line on this chart which would reflect having only 50 percent of CWIP in rate base, it would move the red line slightly down, and it would move the blue line slightly up so that the two lines would be closer together, but there would still be a gap between the two and they would still not converge or be the same until the year 37, which is year 30 of the plant life.

So the fact would still remain that using the present value analysis, or recognizing the fact that money does have time value to consumers, it would show in every year that it was to the advantage of the consumer not to have CWIP in the rate base, and that's what this chart is attempting to display.

And again, as what I said to begin with is that what I've taken is the chart and the numbers which EEI published and gave out in their arguments when H.R. 555 was debated before the House. And since it was widely distributed, what I attempted to do here is to just make one correction to the information that they had presented. I would be delighted to take what's been given to you today and do the same thing for the 50 percent.

Senator MURKOWSKI. Have you had an opportunity to make this presentation to the regulatory authorities in the State of Rhode Island?

Mr. SOLOMON. No, sir, I have not.

Senator MURKOWSKI. Any reason?

Mr. SOLOMON. No one's asked me to, sir.

Senator MURKOWSKI. Have you volunteered?

Mr. SOLOMON. I'd be delighted to.

Senator MURKOWSKI. Well, I hope that someone takes you up on it. It would seem to me that the more communication that the various parties have provides a better understanding of the point of views.

Mr. SOLOMON. If I may add one thing. I have testified on this subject before other commissions, including the FERC and, in fact, I would just repeat one thing for the Chairman this morning; that is, that in its Order No. 298, the Federal Energy Regulatory Commission in the instance that it did consider the time value of money did make the statement that under a plausable assumptions for growth in utility plant in the forseeable future, incuding CWIP in the rate base would be more costly to consumers than not including it.

Senator MURKOWSKI. You're with the manager of the economic and regulatory service department of the Southern Engineering Co.?

Mr. SOLOMON. Yes, sir; that's right.

Senator MURKOWSKI. Are you in contract to any of the firms that have given testimony here today?

Mr. SOLOMON. Yes, sir; I am, with the APPA, American Public Power Association.

Senator MURKOWSKI. So your point of view is the time value of dollars to the consumers as opposed to the value to the public utilities, you are suggesting in your charts that it is indeed in the interest of the consumer?

Mr. SOLOMON. That's correct.

Senator MURKOWSKI. I would strongly suggest that you try and make this point to the representatives of the consumer at your earliest opportunity and see what kind of a give-and-take you have in convincing them of your particular point of view. I think it's an appropriate and an interesting approach and one that certainly has merit.

Mr. SOLOMON. I do believe that indeed this is embraced by all of the consumer representatives that appeared before you.

Senator MURKOWSKI. Not from the State of Rhode Island.

Mr. SOLOMON. I was here when you asked the representative from Rhode Island that question, and I certainly agree with your interpretation.

Senator MURKOWSKI. Well, I would suggest that you make every effort to open up dialog through your association.

Mr. SOLOMON. I think the representative from Rhode Island indeed first expressed the opinion that it was indeed more costly to consumers for CWIP to be in the rate base, he just didn't have the numbers to back it up, and that's what I'm attempting to do here.

Senator MURKOWSKI. Hopefully the two of you will get together.

Mr. RADIN. Mr. Chairman, if I may.

Senator MURKOWSKI. Please.

Mr. **Radin**. I think the consumer groups generally support this legislation and are opposed to the FERC rule. And one of the primary reasons is the information that Mr. Solomon has presented here that they feel that it's in their best interest to have CWIP considered on a case-by-case basis and not to have blanket application of CWIP, as proposed by the order and carried out by the Federal Energy Regulatory Commission.

Senator **Murkowski**. Thank you.

[The prepared statement of Mr. Radin and a subsequent submittal follows:]

Statement
of
Alex Radin
Executive Director
AMERICAN PUBLIC POWER ASSOCIATION
on
S. 817
and
S. 1069 and H.R. 555
The "Construction Work in Progress Policy Act of 1983"
before the
Subcommittee on Energy Regulation
Senate Committee on Energy and Natural Resources

April 12, 1984

My name is Alex Radin. I am Executive Director of the American Public Power Association (APPA), a national service organization representing over 1,750 municipal and other local publicly owned electric utilities throughout the United States, Puerto Rico, Guam, American Samoa, and the Virgin Islands.

During this session of the Congress, the United States Senate has the opportunity to take an important step towards maintaining reasonable and equitable electric utility rates for many consumers nationwide. The Senate can accomplish this by approving S. 1069, the "Construction Work in Progress Policy Act of 1983." The House of Representatives has already taken such an initiative by passing a comparable bill, H.R. 555, on February 8, 1984, by the decisive margin of 288 to 113.

The legislation before you today and the action taken by the House are in response to a rule promulgated last year by the Federal Energy Regulatory Commission (FERC) liberalizing its allowance of construction work in progress (CWIP) in electric utilities' wholesale rate bases. As used here, CWIP means the costs incurred by a utility in financing the construction of a plant, either from issuing bonds or stock. Any investor owned utility may now apply at FERC for inclusion of 50 percent of its CWIP costs in wholesale rate base and it will receive such relief virtually automatically, before the facility being financed goes into service. In other words, every private utility, regardless of its financial position and construction program, qualifies for receipt of 50 percent of its costs of CWIP. In contrast, a number of state regulatory commissions do not allow CWIP at all, and in cases where they do, virtually none has such a broad and inflexible rule as that adopted by FERC. Where they permit CWIP, the state commissions do so on a case-by-case basis, depending on the financial condition and construction program of the individual utility.

Since the new FERC policy went into effect on July 1, 1983, 12 private utilities have applied for over $100 million in CWIP-related rate increases and many have already raised their rates to reflect inclusion of CWIP in rate base.

The FERC rule was a radical departure from traditional ratemaking practice. Utility commissions have consistently been guided by the principle that consumers should only be charged for plants which are "used and useful." CWIP, however, forces today's customers to pay for tomorrow's plant, but with no certainty that such plant will actually come on line. CWIP also creates a fundamental shift in the risk of construction of plants from shareholders to consumers. For these and other reasons, the Commission, until recently, has treated CWIP as an extraordinary remedy to be applied on a case-by-case determination of utility financial need.

The rule is particularly unfair to the more than 900 local publicly owned electric utilities which purchase some or all of their power at wholesale from companies subject to FERC regulation. The irony of the situation is that CWIP hits these utilities hard, but provides relatively little relief for the companies which are permitted to use CWIP. The reason is that wholesale power costs represent as much as 100 percent of the bulk power costs of many municipally owned utilities, but the revenues received by the power companies from wholesale sales are only about 11.5 percent of their total electric operating revenues, because these companies receive most of their income from retail sales.

The fact that a growing number of state regulatory commissions do not allow the inclusion of CWIP in determining retail rates is exacerbating competitive problems for municipal wholesale customers of power companies. This divergence in CWIP policy between FERC and the state regulatory commissions is placing many wholesale customers in an untenable position.

Municipal utilities and others whose wholesale power costs are regulated by FERC are automatically being charged the cost of CWIP, which they must in turn pass along to their retail customers. At the same time, the wholesale suppliers, who also serve retail customers, are not allowed by a number of state regulatory agencies to include the cost of CWIP in their retail rates. Thus, the municipal utilities are placed in the position, in many cases, of charging higher retail rates than the neighboring power companies. Unless corrected by congressional action, the FERC rule will seriously impair the ability of many municipally owned electric utilities to provide electric service at reasonable and competitive rates, and thus will weaken institutional competition within the electric utility industry.

The current FERC policy also is contrary to the public interest for a number of other reasons set forth in this statement. APPA believes S. 1069 offers a reasonable, rational regulatory course for dealing with the issue of construction work in progress, and we urge its favorable consideration by the Senate.

Until 1983, the Commission followed a regulatory course similar to that provided in S. 1069. Prior to its change in policy last year, FERC permitted CWIP in wholesale rate base in three situations -- construction of pollution control facilities; conversion of oil or gas-fired plants to other fuels; and when an individual utility could demonstrate that it was in "severe financial difficulty." The Federal Power Commission, FERC's predecessor, adopted this policy eight years ago. At that time, the Commission commented as follows on the third criterion:

> ...we will not consider any inclusion of CWIP in rate base...absent a clear showing of severe financial difficulty which cannot be

> otherwise alleviated without materially increasing the cost of electricity to consumers. Where such a showing is clearly and convincingly made, we will consider the inclusion of some amount of CWIP in rate base on a case-by-case basis. (FPC Order No. 555) (emphasis supplied.)

Today, FERC has taken a dramatically different approach. It has not altered its policy of complete allowance of CWIP for pollution control facilities or plant conversions. But now, any utility, regardless of its financial condition, may include up to half its CWIP costs in wholesale rate base. To mitigate against severe rate impacts, FERC is limiting increases attributable to CWIP to 6 percent annually for the first two years that the rule is in effect. However, the Commission indicates that utilities may exceed the 50 percent level in total where they include CWIP in rate base for expenses incurred in constructing pollution control facilities, conversion of oil or gas-fired units, or initial rate filings.

Did conditions change so significantly in the electric utility industry over the past several years to justify such an extraordinary shift in the Commission's CWIP policy? We believe the answer is "no."

If anything, since FERC began its consideration of this issue, the shift in the industry's financial position has been exactly the opposite of what the Commission believes. As H. Thomas Kilburn, Jr., with Blythe Eastman Paine Webber, wrote recently:

> Faced with reduced construction expenditures, more normalized fuel costs, and diminished load growth, many...utilities must learn how to manage prudently businesses that, for the forseeable future, will be "cash cows." "The Cash Dilemna," Electrical World, February 1984, pp. 82-84. (emphasis supplied)

We believe there are three fundamental issues which are at stake in the CWIP debate -- dollars, competition, and adequacy of electric power -- and that FERC used mistaken assumptions, ignored important consumer considerations, and arrived at erroneous conclusions in addressing these issues.

The propriety of charging CWIP has always revolved first around the central question of who should provide the capital required to make the "up front" investment in building an electrical generating plant -- investors or ratepayers. Traditionally, investors have provided that capital, with an expectation that they would benefit from their investment once plants were completed.

Today, however, FERC, the U.S. Department of Energy (DOE), and investor owned utilities want to shift this risk onto consumers by making them pay these financing costs "up front," before plants go into service. We fail to see any change in conditions which would warrant such a fundamental shift in policy.

The second fundamental issue at stake here focuses on the competitive relationship between investor owned utility suppliers of bulk power and their wholesale customers -- municipally owned electric utilities and rural electric cooperatives. These investor owned utilities, in most cases, are not only wholesale suppliers, but they compete at retail with their wholesale customers. This institutional competition has existed throughout the history of the electric utility industry, and has been deemed beneficial to consumers.

However, the FERC rule on CWIP will make it extremely difficult for such competition to exist in the future, because of the divergent positions taken on CWIP by FERC and state regulatory commissions. The FERC rule on CWIP also will make it much harder for the wholesale customers to provide their own bulk power supply in the future.

Finally, FERC, DOE and private utilities believe that the nation will suffer electricity shortages if utilities do not receive liberal rate increases as a result of allowance of CWIP in the rate base.

We believe that these fears are unfounded. A key factor in determining whether companies can attract capital to build necessary plants is the financial condition of individual companies. The record indicates that most companies are generally in sound financial condition, and are not having difficulty in attracting capital. In fact, the financial condition of the entire industry compares favorably with that of other industries.

Admittedly, some electric companies are in serious financial straits. But these are the relatively few which are involved in nuclear power projects whose costs have escalated far beyond any expectations, and whose construction schedules have slipped badly. Aside from the question of whether allowance of CWIP for these companies would be equitable to consumers, the fact is that CWIP would not be the answer to these utilities' problems. The current financial problems of these companies do not stem from their inability to include the cost of CWIP in their wholesale rates.

As to the question of whether CWIP is needed to attract capital so the utility industry can meet future needs of consumers, our studies -- based primarily on surveys undertaken by the utility industry itself -- lead to the conclusion that the electric industry will have ample capacity for the next decade. Today, in fact, the electric industry's reserves are nearly 65 percent above the 20 percent level traditionally regarded as prudent. We see no evidence that capital will not be available in the future for the construction of facilities that are regarded as needed, and as sound investments.

As is indicated in more detail in subsequent portions of this testimony, we believe that the current FERC policy on CWIP lacks merit, and is unfair to consumers. To redress the problems created by the FERC order on CWIP, we believe that enactment of S. 1069 is urgently needed.

S. 1069 would require FERC to carry out its responsibilities of reviewing the need for rate relief on a case-by-case basis, rather than allowing blanket relief through virtually automatic allowance of CWIP.

S. 1069 also would provide a number of important consumer protections which we believe are in the best long-range interests of regulated utilities, as well as consumers. For example, before being allowed use of CWIP a utility would have to show that it has sought use of less capital intensive and more efficient means of providing electric service. FERC also would have to find that allowance of CWIP would not create a "price squeeze" (i.e., price discrimination by a private utility between its wholesale and retail customers). Full consideration of these and other issues is essential if FERC is to perform its regulatory duties in the public interest.

APPA believes there is an urgent need for enactment of S. 1069 for the following reasons, each of which will be discussed in more detail below:

1. CWIP must be treated on a case-by-case approach.
2. FERC is prescribing financial medicine for a utility industry which is generally in good financial health.
3. Implementation of FERC's CWIP rule adversely affects the financial and competitive interests of more than 900 local publicly owned utilities.
4. The foundations of the rule are based on erroneous assumptions.
5. Well-established utility ratemaking principles are being violated by FERC.
6. Allowance of CWIP is not needed to avert power shortages.
7. The Commission has abdicated its statutory duties under the Federal Power Act.
8. There is a stark contrast between the protections offered by the FERC rule and S.1069.

I. CWIP Must Be Treated on a Case-By-Case Approach

One of the most serious flaws in the present FERC policy is that the Commission permits virtually automatic allowance of 50 percent of CWIP, despite the fact that the financial condition of individual electric utilities varies considerably. To the best of our knowledge, few, if any, state regulatory commissions allow CWIP automatically. Instead, state commissions allow CWIP on a company-by-company and case-by-case basis.

Edison Electric Institute (EEI) President William McCollam has perhaps stated most cogently why a utility's financial condition should be considered on an individual basis:

> In seeking a perspective on the industry and its prospects, certain aspects need emphasis. For example, as in other industrial groupings, whether they be airlines or steel companies, there are _wide_ differences among electric utilities. The differences may be more pronounced than in past years, for various reasons, but _the fact is that electric utilities have to be viewed on a much more individual basis than currently seems to be the case._ Remarks of William McCollam before the New York Society of Security Analysts, February 8, 1984, p. 12. (emphasis supplied.)

McCollam's evaluation is shared by some on Wall Street. _Fortune_ reported the following in its edition of April 2, 1984:

> "It's like two different industries," says Salomon Brothers analyst Mark Luftig, referring to the sharp divergence between companies that are going broke and those that are doing well. "_For the first time in years," he says, "many utilities are asking us what to do with excess cash_." "Utility Stocks," p. 128. (emphasis supplied.)

Leonard Hyman, Vice President, Merrill Lynch, and head of the Utility Research Group, confirms this assessment:

> The industry may be splitting into two groups: one that is financially healthy; another that remains in bad shape. "The Challenge of Excess Cash," _Electrical World_, February 1984, p. 81.

Hyman says he expects

> utility managements with severe problems will have to explain why they are having difficulties while their neighbors are not. In other words, why did certain managements make what appear to have been the right decisions and others the wrong ones, and why should the customers of the latter companies have to foot the bill for the mistakes? _Id_.

In distinguishing the financial performance of individual utility companies, bond rating agencies evaluate a number of factors. These factors, from a financial standpoint, include coverage, allowance for funds used during construction (AFUDC), internal cash generation, rate of return on common equity, and size of construction programs. In addition, these agencies examine carefully the company's management and review its efforts to control costs. Altogether, Moody's, for instance, lists 38 specific factors which it uses to evaluate a company, of which CWIP is only one.

EEI and Wall Street recognize distinctions between companies; FERC sees none. Bond rating agencies use a wide range of factors to evaluate a company's financial position, many of which are relevant to deciding whether CWIP rate relief is required. FERC effectively judges none. We believe that the least a regulatory agency can do in protecting the public interest is to undertake as careful scrutiny of individual utilities as EEI and Wall Street do themselves.

FERC and the industry will most likely argue to the contrary -- the rule is not automatic, nor is the Commission going to abdicate its regulatory responsibilities. They will contend that FERC does consider "price squeeze," prudence, and whether a wholesale customer will be building its own plant and thus not buying power from its supplier in the future (i.e., "double whammy").

We hope the Commission will look at such issues, but FERC's track record to date gives us little hope. With respect to "price squeeze" allegations, the United States Court of Appeals for the District of Columbia Circuit, in an opinion issued March 30, 1984, said that the Commission's failure to address and remedy a "price squeeze" has been rationalized with "a fertile source of excuses." Borough of Ellwood City, Pennsylvania et al. v. FERC, Docket No. 83-1196. As for prudence, the Commission has rarely examined utility management decisions and penalized companies for imprudent decisions. Finally, FERC has toughened its "double whammy" test, making it exceedingly difficult for customers to leave their suppliers. Furthermore, the Commission allows CWIP to be placed into rate base subject to refund. Thus, by the time FERC gets around to making a finding in any of these areas, a customer could be severely damaged and any relief would be rendered almost meaningless.

II. FERC Is Prescribing Financial Medicine for a Utility Industry Which Is Generally in Good Financial Health

A. The Industry's Financial Condition in 1981

When FERC issued its Notice of Proposed Rulemaking in July 1981, an argument could be made that the utility industry was an ailing patient. The causes of its "aches and pains" were described in a General Accounting Office (GAO) report issued in September 1981:

> ...investment bankers, bond rating companies and pension fund managers agree the main factor underlying the Nation's electric utility industry's financial condition is high inflation. "Federal Energy Regulatory Commission Needs To Act On The Construction-Work-In-Progress Issue," September 23, 1981, p. 5. (emphasis supplied.)

The GAO also cited high interest rates and skyrocketing construction costs as contributors to the industry's declining financial health.

Utilities, however, were not the only sick patients. As Michael Foley, Director of Financial Analysis of National Association of Regulatory Utility Commissioners (NARUC) commented, "(t)here is little doubt that the record rates of inflation, interest and federal deficit spending have done measurable damage to the electric utility industry as well as to the economy as a whole." "Electric Utility Financing -- Let's Ease Off the Panic Button," Public Utilities Fortnightly, January 6, 1983, p. 23.

However, by the time FERC got around to issuing its prescription last year, overall economic conditions had improved significantly. Inflation was down to 3.8 percent. Consumer demand for goods was up appreciably. Industrial production was rising. If the GAO was correct in its diagnosis, then these gains should have caused an improvement in the financial health of private utilities -- which, in fact, was the case.

B. The Industry's Financial Condition Today

The utility industry today is in the best financial health that it has enjoyed in years. Indeed, the industry itself touts its strong economic position. EEI President William McCollam acknowledged this in a February 1984 speech:

> On an over-all basis, the electric utility industry showed signs of regaining financial health last year. With continued economic recovery, relatively low inflation and moderate interest rates, the outlook for the industry as a whole is brighter than it has been for some years." Remarks, February 8, 1984, p. 12. (emphasis supplied.)

McCollam cited several figures confirming the restoration of the industry's good financial health:

> -- actual earned return on equity averaged an estimated 14.2 percent in 1983, compared with 13.6 percent in 1982;
>
> -- 93 dividend increases were announced last year, contrasted with 91 in 1982; and
>
> -- pre-tax interest coverage of 3.02 times was above the 1982 level of 2.77 times. Id., pp. 14-15.

As a long-term measure of the industry's restored financial condition, he noted that actual earned return on equity stood at 10.6 percent in 1974, and also indicated that only 45 dividend increases were announced that year. Id.

As further evidence of the patient's rosy health, The Energy Daily, January 16, 1984, reported:

> EEI has compiled a number of other cheering statistics about its member utilities' performance. Among them: for the first nine months of last year, more than $3.9 billion of rate increases (on an annualized basis) were granted; interest expense on long-term debt rose by 7.7 percent -- the lowest quarter-to-comparable-quarter increase since 1976's second quarter; the 9.3 percent increase in common stock outstanding was the lowest percentage increase since the third quarter of 1980....

Other measures of the electric utility industry's profitability also demonstrate the soundness of its financial condition. In each year between 1972 and 1982, the industry's net income increased. From 1979 through 1982, net income rose at an average annual rate of 16 percent, while the profits of the nation's leading corporations declined at an average of 2 percent per year. In 1980, utilities' profits rose 13 percent; in 1981, by 20 percent, and in 1982, by 19 percent. Although final profit data for 1983 is not yet available, preliminary data indicate that the industry's profits increased by 18 percent.

In dollar terms, these increases mean that industry profits rose by almost $6 billion over the years 1979 to 1982. And when 1983 figures are added, the increase in profits will likely be over $8 billion; a 91 percent increase over those four years. No wonder electric utility stocks have been one of the best buys on Wall Street.

C. The Industry's Complaints

In spite of the substantial evidence to the contrary, some spokesmen for private utilities continue to bemoan their industry's financial health. They complain that a significant share of their reported profits comes from AFUDC, or allowance for funds used during construction. The industry notes that AFUDC is an accounting entry that represents non-cash earnings which are only converted to cash when facilities are completed and placed into rate base.

The basic financial integrity of the industry, together with the significant profit increases which it has posted during the past several years, cannot be dismissed by citing the effect of AFUDC. The criticism that AFUDC represents non-cash earnings proves nothing; the balance sheets and income statements of businesses are filled with these so-called "accounting" entries which do not represent actual cash transfers when they are entered on a company's books. AFUDC routinely becomes part of the rate base and provides a basis on which cash revenues are earned. There is nothing illusory about these earnings; they are real.

More importantly, industry profits remain impressive even after AFUDC amounts are subtracted from net income. Utility net income, excluding AFUDC, increased by 6 percent in 1980, 21 percent in 1981, and 16 percent in 1982. In contrast, the U.S.

Department of Commerce reported *declines* in the profits of all corporations in each of these years -- 9 percent in 1980, 4 percent in 1981, and 20 percent in 1982. During the ten-year period between 1973 and 1982, electric utilities' profits, again *excluding* AFUDC, declined only twice by slight amounts -- 1 percent in 1974 and 1.6 percent in 1979. In each of five years during the 1972-1982 period, industry profits increased by 9 percent or more. Moreover, the substantial profit increases posted in 1982 came despite a 1.3 percent decline in kilowatt hour sales, a 1.9 percent decline in the nation's economic output, and one of the most severe recessions in over forty years.

The industry also decries the fact that its average market-to-book ratio (MBR) is slightly less than unity; that is, its stock is trading at less than book value. Shimon Awerbuch, chief of economic and policy studies, utility intervention office, New York State Consumer Protection Board, raises doubts about the significance of this figure:

> Utility company arguments that MBR must be kept at one assume that the *economic* value of the stock is equivalent to its book value. Book value represents the total amount of money a company has spent on its rate base less accumulated depreciation. As such, it is only one of numerous measures of value of a company's assets...and textbooks minimize its usefulness. Notes one author: "Book and market values will probably be equal when the stock is issued, but after that it appears only *coincidence* will keep them equal at any given moment." Others depict MBR as only slightly more significant, characterizing it is an "approximation" which gives us "some idea" of value. "Industry Maturation, Market-to-Book Ratios, And the Future of Electric Utilities," *Public Utilities Fortnightly*, February 2, 1984, p. 19. (emphasis in the original and supplied.) (citations omitted.)

Even if one accepts the industry's argument that MBR is an important factor, Awerbuch says:

> The MBR is a reflection of investor confidence in the future earning capabilities of a company's assets. *An MBR below one...is a logical and expected outcome for electric utilities. These companies are part of a mature industry which has not had any significant innovation in the last forty years.* *Id.*, p. 18. (emphasis supplied.)

He goes on to say that their pleas for additional rate relief may do more harm than good to the financial position of utilities:

> As each rate increase is granted...substitutes (for electricity) become increasingly attractive. It is important for the industry and the regulators to take such considerations into account so that during the 1980s the utilities do not repeat the history of the railroads in the 1930s, and the franchised local transit companies during the late 1950s and 1960s. Id., p. 17.

Awerbuch concludes that "it may simply not be possible, 'even for all the regulatory good intentions in the world,' to raise a company's MBR by increasing rates...." Id., p. 22.

D. Wall Street's Bullish Perspective on the Industry

The improved financial standing of utilities has not gone unnoticed by investors. Admittedly, Wall Street and others are concerned about utilities with large construction programs, particularly those with nuclear plants. However, as Fortune reported a little more than a week ago:

> Like a radioactive cloud, the recent wave of nuclear plant cancellations has cast a pall over most electric utility stocks -- unfairly, say many Wall Street analysts. The stocks of untroubled power companies offer dividend yields of 8% or better, the promise of future dividend hikes, and a good chance for capital appreciation. "Utility Stocks That Glow Among The Gloom," Fortune, April 2, 1984, p. 128.

Business Week commented similarly late last year:

> (T)he bad news has affected relatively few companies, and the outlook for the industry is far brighter than the stormy headlines imply. After a decade that saw quadrupled oil prices, double-digit interest rates, a wrenching bout of inflation, and slackening demand for electric power, the economic forecast for utilities in the mid-1980's is so much sunnier that you may want to consider investing in utility stocks. "The Tempting Plays In Utilities," Business Week, December 19, 1983, p. 120.

Recent Salomon Brothers' stock reports share a similar optimism:

> With the abatement of construction, a relatively low rate of inflation, favorable weather conditions, and greater use of projected test periods, a growing number of companies are earning at levels above their allowed rates of return. "Electric Utility Regulation -- Semiannual Review," February 8, 1984, p. 3.

The investment firm also noted the longterm improvement in the industry's financial position:

> Our review of 117 operating companies shows that the industry median pretax interest coverage of interest charges was 3.2 times (including AFDC (allowance for funds used during construction)) for the 12 months ended September 30, 1983. This measure has shown continued improvement since 1980 and *is at its highest level since 1972.*" "Electric Utility Quality Measurements," January 3, 1984, p. 9. (emphasis supplied.)

E. FERC Is Providing Private Utilities with a Financial Windfall

At the wholesale level, there is little that FERC can do to improve materially the financial condition of private utilities, without severely penalizing their wholesale customers, because revenues from wholesale sales constitute only about 11.5 percent of investor owned utilities' total electric operating revenues. Further, consider the financial standing of these current applicants for CWIP at the Commission:

> *Southern California Edison*
>
> Southern California Edison...had record earnings in 1983....(T)he utility's earnings soared by 21 percent -- from $5.13 a share in 1982 to $6.22 a share last year. Common stock price exceeded book value for most of the year and the company earned its authorized return on equity....*The Energy Daily*, March 20, 1984, p. 3.
>
> *New England Electric System*
>
> 1983 was a good year for New England Electric with earnings per average share at a record $5.48. The System's average annual earnings growth rate is 11 percent for the past five years.
>
> In February, the...System increased the quarterly dividend from 75 to 80 cents per share. In November, they increased the dividend again to 85 cents per share, the eighth increase in the past five years. Dividends declared in 1983 represent a payout of 59 percent of earnings. New England Electric System, Annual Report 1983.
>
> *Montaup Electric*
>
> I am pleased to report that 1983 was a year of continued financial growth for Eastern Utilities Associates (parent company of Montaup Electric). Kilowatthour sales advanced across the board, the company achieved record earnings, your dividend was increased, and the System's overall financial position was strengthened....
>
> Earnings per share jumped from $2.25 in 1982 to $2.80 in 1983; for the second consecutive year the quarterly dividend was raised from 42.5 cents per share to 45.5 cents per share; and, as in 1982, we ended the year with no short-term bank debt. John Eichorn, Jr., President, Eastern Utilities Associates, Annual Report 1983.

> Virgnia Electric and Power Company
> Dominion Resources (parent company of Virginia Electric and Power Company)...currently has the second-highest yield...among those utilities that do not have any nuclear power plants under construction. Salomon Brothers, "Electric Utility Monthly," January 4, 1984, p. 5.

For these and other applicants, FERC is providing companies with a significant financial windfall by allowing automatic inclusion of 50 percent CWIP in rate base.

III. Implementation of FERC's CWIP Rule Adversely Affects the Financial and Competitive Interests of More Than 900 Local Publicly Owned Utilities

A. Rate Impact of the CWIP Rule

Since the CWIP rule went into effect on July 1, twelve utilities have applied for and, in most instances, are already charging for the following amounts of CWIP:

Utility	Amount
Southwestern Electric Power Co.	$ 457,000
Virginia Electric Power Co.	7,900,000
Kansas Gas and Electric Co.	1,600,000
New England Power Co.	50,000,000
Kentucky Utilities	3,300,000
West Texas Utilities	1,969,000
Carolina Power and Light	12,400,000
Niagara Mohawk	793,000
Montaup Electric	12,200,000
Southern California Edison	10,400,000
El Paso Electric	335,000
Wisconsin Public Service	459,000

The rate increases caused by the inclusion of these amounts of CWIP in wholesale rate base are borne by numerous consumers nationwide. It is paid by the residential ratepayers of many of the more than 900 local publicly owned utilities which purchase some or all of their power from private companies. It is paid by the consumers of many of the 400 rural electric cooperatives which also buy power at wholesale from investor owned utilities. And it is paid by the customers of small private utilities which distribute wholesale power purchased from investor owned companies.

The increases caused by the rule, however, are not felt solely by residential ratepayers. Industrial concerns served by wholesale customers also are affected, and their higher power rates must be factored into the cost of goods they produce. Given the pressures which electricity intensive industries such as autos, steel, paper and aluminum already face, these companies will have a more difficult time competing effectively when they have to face the additional burden of CWIP.

The impact of the FERC rule could become considerably more far-reaching in the future. It has been reported that, in order to take advantage of this rule, and for other reasons, some electric utilities are considering reorganizing their corporate structure in a manner similar to New England Electric System (NEES). This would enable such utilities to come under FERC jurisdiction for this purpose, and thereby escape more stringent state rate regulation. The experience of NEES points the way to such a procedure. NEES is a holding company with a generating and transmission subsidiary, New England Power Company (NEPCO), which presently has the largest CWIP-related increase pending at FERC. Much of the increased rates will be charged to two NEES distribution subsidiaries, Narragansett Electric and Massachusetts Electric. Through this corporate structure, NEES is able to take advantage of FERC's liberal rate policies and avoid state regulations such as those in Rhode Island and Massachusetts prohibiting inclusion of CWIP in retail rates.

Facing intense consumer pressure at the state level, utilities have a tremendous inducement to come under FERC's jurisdictional umbrella and take advantage of its more liberal policies on CWIP. These are some examples of actions taken at the state level to prohibit or limit the application of CWIP:

> -- Four states, Missouri, Oregon, New Hampshire and, most recently, Pennsylvania, have passed referenda or laws prohibiting CWIP in retail rates;

-- A number of other states, including Alaska, California, Hawaii, Indiana, Iowa, Massachusetts, South Dakota, and Rhode Island, have identical policies under administrative regulations;

-- In February, 1984, Idaho enacted a law restricting CWIP relief to cases of "extreme emergency;" and

-- Last year, Illinois passed a law phasing out CWIP between now and 1988; Texas enacted a statute defining CWIP as an exceptional form of rate relief and Connecticut passed a law limiting CWIP strictly to utility financial hardship resulting from investments in two nuclear projects, one of which has now been cancelled.

In fact, few states permit CWIP on a fixed percentage basis, or provide such relief automatically as is done by FERC. Where these restrictions don't exist, there are grassroots efforts underway in some states to have such policies adopted.

Customers not only lose dollars from their pockets with CWIP, they also lose the present value of those dollars by paying for utilities' financing costs "up front." As FERC itself acknowledged:

> For the industry as a whole, the Commission believes that, under plausible assumptions of future demand growth and inflation, CWIP-based rates may remain somewhat higher than AFUDC-based (allowance for funds used during construction) rates for the forseeable future....Assuming CWIP-based rates are slightly higher for the forseeable future,...no present value analysis will show that...(such)...rates are less costly to consumers,...regardless of the consumer discount rate utilized. FERC Order No. 298, p. 106.

It may be argued that under a rule allowing CWIP consumers pay more now but less later. However, such analyses do not take into account the time value of money to consumers. When the time value of money is taken into consideration, including CWIP in the rate base will always be more costly to consumers than not including CWIP in the rate base, according to analyses made by J. Bertram Solomon, manager of the economic and regulatory services department of Southern Engineering Co., Atlanta, Georgia.

B. The Competitive Impact

1. "Price Squeeze"

The rate impact of charging CWIP to wholesale customers exacerbates the "price squeeze" situation facing municipally owned utilities. A "price squeeze" occurs when a wholesale customer purchases power from its private supplier at a rate which does not permit the customer to sell power at retail levels competitive with the retail prices offered by the supplier.

Allowance of CWIP aggravates this problem for three reasons: (a) wholesale power costs represent as much as 100 percent of the bulk power supply costs of some municipally owned utilities, and about 85 percent of their total operating expenses; (b) revenues from wholesale sales represent only about 11.5 percent of the total electic operating revenues of investor owned utilities; and (c) an increasing number of state regulatory commissions are prohibiting or severely restricting the inclusion of CWIP in rate base, for determining retail rates.

These circumstances mean that the municipal utility must pass along to its retail customers the cost of CWIP, while the wholesale supplier, which also serves retail customers in the area adjacent to its wholesale customer, cannot pass along its costs of CWIP to its retail customers. The municipal utility therefore finds itself in an untenable competitive situation.

Under FPC v. Conway Corp., 426 U.S. 271 (1976), the Commission is supposed to consider "price squeeze" allegations and modify wholesale rate increases to avoid this anticompetitive effect. While FERC has found evidence of such "squeezes," it has refused to provide any relief to affected customers. The U.S. Court of Appeals for the District of Columbia Circuit in the previously cited case, Borough of Ellwood City, Pennsylvania et. al., severely chastised the Commission for its actions in this area:

> In its decision in this case, the Commission considered the extent to which "the paradox of dual utility rate regulation" may wholly excuse a price squeeze that otherwise would require a remedy. In our view, the Commission has in effect converted "the paradox of dual utility rate regulation" from a rationale for the price squeeze doctrine into a fertile source of excuses for the imposition of a price squeeze....The Commission's statutory duty to ensure that rates are not unduly discriminatory is not so wholly subordinate to its duty to set just and reasonable rates that it may simply ignore the discriminatory effect of state ratemaking policies and procedures in setting a wholesale rates....(Slip op. at 30-31.)

Pennsylvania also provides a useful illustration of a "price squeeze" caused by the FERC CWIP rule. Consider a Pennsylvania municipal utility purchasing power from a private company which is constructing a plant. Under FERC's policy, the company will include half its CWIP costs in the wholesale rates which it charges to its municipal utility customer. The public system, which is not under the jurisdiction of the state utility commission, will then be forced to pass the higher CWIP-based costs onto its ratepayers in order to remain solvent. At the same time, if the private company provides retail service to an adjoining town, its retail ratepayers will not pay CWIP because Pennsylvania prohibits this practice. The municipal utility clearly cannot compete in this situation. In fact, if the rate differential is sharp, the consumer-owners of the public system may sell their utility to take advantage of the company's lower rates, with the resulting loss in industry competition.

The municipality may try to litigate the "price squeeze" aspects of the FERC CWIP rule under the above-cited court decision. However, under FERC's CWIP rule, the Commission permits a wholesale supplier to collect such rates subject to refund; that is, customers and their ratepayers pay these charges until they are found to be "unjust and unreasonable." By the time that determination is made, the damage may have already been done. In contrast, S. 1069 only allows CWIP to be collected subject to final order, thereby providing customers with a reasonable opportunity to litigate such issues.

2. "Double Whammy"

A number of wholesale customers also may be confronted with a "double whammy." This occurs when a municipal utility, either on its own, or through a joint action agency of which it is a member, decides to construct its own generating facility or purchase an interest in a private company's plant. According to a 1982 Energy Information Administration report, municipal utilities or joint action agencies were co-owners of 29 of 74 jointly owned generating projects.

While the municipal utility is constructing its own plant, it continues to purchase power from its private utility supplier. If the company is constructing a plant and is allowed to charge CWIP, the publicly owned utility will not only pay its own construction costs, but a portion of those of the company as well. Hence, the "double whammy."

FERC acknowledged this dilemma in its initial order, but failed to provide any relief. During rehearing, APPA reminded the Commission of its Opinion No. 164 involving a Public Service of New Mexico (PNM) request for pollution control CWIP. In that case, the company included "all pollution control CWIP in rate base associated with San Juan No. 4." PNM, however, had executed a contract to sell one-half of the plant's output to San Diego Gas and Electric Company. FERC stated it was inequitable for wholesale customers to pay for this cost because "(t)here is no evidence that the customer charged with CWIP will receive service from the related unit." Opinion 164 at p. 3. When FERC issued its rehearing order, it agreed that wholesale customers who demonstrate that they will not receive power from a facility should not pay CWIP, but then added another requirement -- customers also must show that their wholesale supplier did not consider their power needs in deciding whether to construct a plant.

APPA does not take issue with the first requirement. The Association believes it is reasonable, as H.R. 555 provides, to make wholesale customers show that they will derive little or no benefit from a plant before being excused from CWIP payments. Since S. 1069 does not correct this inequity, we urge the committee to amend the bill to include the following language from Sec. 213(h)(4) of H.R. 555:

> The amount of costs of construction work in progress permitted to be included in a public utility's rate base by Commission order shall be limited by the following condition --
>
> upon certification by a customer of such public utility that a facility, or portion thereof, the costs of which are proposed to be included in rate base by such public utility will not be used to serve such customer or will provide service to such customer for

> only a fraction of such facility's useful life, the Commission shall limit the increase of rates to such customer attributable to the inclusion of such facility in such public utility's rate base to an amount that is just and reasonable in light of the facts of the situation.

We suggest that this language be inserted as Sec. 213(c) in S. 1069.

We believe that FERC's second requirement -- that customers show their wholesale supplier did not consider their power needs in deciding whether to construct a plant -- is totally unreasonable. In effect, the Commission is asking wholesale customers to read the minds of their power suppliers and divine why they decided to construct a plant. Even if the customers could do so, the suppliers would undoubtedly argue to the contrary and, with the evidence in their control, they would probably prevail. In this event, wholesale customers would likely opt to remain with their suppliers, rather than paying twice for future power capacity. Such a result again would impair competition within the industry.

IV. The Foundations of the Rule Are Based on Erroneous Assumptions

In Order No. 298, FERC justified its change in CWIP policy on three assumptions which we believe to be erroneous:

1) Private utilities are "capital averse";

2) Consumers are not receiving proper price signals about the "true" cost of electricity, and

3) CWIP will stabilize rates.

The issue of "capital aversion" was discussed previously in Section II on utility financial health. Suffice it to say, the record indicates that the utility industry, generally speaking, is not "capital averse." The problems of those relatively few companies which are in financial difficulty is not rooted in their inability to include CWIP in their wholesale rates, nor will the financial ills of these companies be cured now by allowance of CWIP in their wholesale rates.

ice Signals

rationale offered by FERC for its new policy centers on the issue of price s [illegible]s. Under the former practice of capitalizing construction costs, ratepayers were not charged the costs of a plant until it came on line. The Commission claims that this practice prevented customers from knowing the actual costs of providing electricity and distorted their energy usage. Once ratepayers experienced these higher costs, they cut back on their demand. This resulted in excess capacity. Thus, FERC believes CWIP is needed to match supply and demand more accurately.

This argument fails on several points. First, it overlooks the numerous price signals which consumers have already received on the cost of electricity. As Michael Foley of NARUC notes,

> ...it should at least by now be abundantly clear that demand for electricity is both satiable and elastic. The $8 billion in rate increases granted during 1981, the $6 billion in rate orders anticipated for 1982, and the record shattering $10 billion in rate requests now pending in the state commissions has had and will continue to have a dampening impact on the nation's appetite for electricity. "Electric Utility Financing - Let's Ease Off The Panic Button," p. 27.

During the past decade, the real cost of electricity has risen nearly 57 percent. Consumers are aware of the cost of providing them with service, and have demonstrated that they are willing to do with less electricity or use alternative energy sources.

The House Committee on Energy and Commerce report on H.R. 555 offers two additional reasons why FERC's price signal argument fails:

> (P)rice signals are only valid if a resource whose cost is being communicated is an optimal one, that is cost-effective. If inclusion of CWIP in rate base should encourage utilities to build new powerplants when such powerplants are not cost-effective, communicating their costs to ratepayers through CWIP...will overstate the conservation that is really cost-effective.
>
> Utility price signals are valid only when customers, through changing their consumption in response, enable a utility to avoid

> the cost of a resource. By definition, if CWIP in the rate base is the price signal, at least a portion of the costs of the resource being financed through CWIP rates cannot be avoided. H. Rept. 98-350, p. 21.

FERC's response should not be to grant CWIP liberally, but to encourage utilities to meet their service obligations more economically and with greater flexibility. S. 1069 provides a mechanism which will help assure that electric service is provided through least-cost means.

B. "Rate Shock"

FERC also contends that CWIP will stabilize rates by preventing "rate shock." In the past, "shocks" have reportedly occurred when an expensive facility, such as a nuclear plant, was placed in service, the cost was included in the rate base, and rates were then increased substantially. CWIP supposedly would avoid such a result by phasing financing costs into rate base as those expenses are incurred.

The mere fact that a costly generating unit is being placed into rate base does not necessarily cause a precipitous increase in consumers' electric bills. Often, higher plant costs are offset by fuel savings or efficiencies gained from replacing obsolete facilities. Of the former, a Salomon Brothers report indicates that '(i)n California and Florida, the San Onofre 2 and St. Lucie 2 plants were able to generate enough fuel offsets to provide...(acceptable)...rate increases...." "Electric Utility Regulation -- Semiannual Review," February 8, 1984, p. 1. Plants also are usually built to accommodate future load growth. Thus, the costs of a new plant may be spread among a larger customer base.

Another analysis by the investment firm confirms our belief that FERC has considerably over-stated the possible extent of "rate shock." In a report entitled, "New Nuclear Plants: Will 'Phase-Ins' Be Necessary?" the investment firm says, "most of the new nuclear plants coming on-line between now and the end of 1984 will not create dramatic rate requests." "Industry Analysis," December 14, 1982, p. 1. (emphasis in the original) Of the 22 plants for which estimates were prepared, we believe that the costs of only three units could be described as causing a "rate shock." Rates are expected to rise between 20 and 45 percent for these plants. Of the remaining facilities, seven plants will increase rates 7 to 14 percent, and 12 plants will change rates from a 7 percent increase to a 6 percent decrease.

If rates do rise substantially, there are better regulatory tools to handle this problem than allowing CWIP. For example, once it is reasonably certain that a plant will be coming on line, these costs may be gradually phased into rate base over a period of years. In fact, a number of utilities or state commissions are recommending such action. Phase-ins are under consideration in at least seven states. By phasing-in these costs, economic dislocations are avoided, and investors are assured of a return on their investment. Alternatively, as H.R. 555 provides, a regulatory commission may want to use "mirror" CWIP. Under this practice, a utility is allowed to charge CWIP for a limited number of years and, once its plant goes into service, it returns ratepayer CWIP contributions to them over the same time period through a reduction in rate base.

V. Well-Established Utility Ratemaking Principles Are Being Violated

CWIP violates the traditional "used and useful" principle of utility ratemaking. This principle holds that consumers should not be charged the costs of a plant until it actually provides them with electricity.

The principle is especially applicable today in the light of recent and impending new plant cancellations. The Atomic Industrial Forum reports that 142 nuclear and coal-fired plants were cancelled during the period 1975-1983, and other sources indicate the possibility of additional cancellations. There is consequently a substantial likelihood that ratepayers could pay for plants that will never be "used and useful," if CWIP is allowed in the rate base. This would place an intolerable burden on consumers.

In the case of wholesale rate regulation, the "used and useful" principle also has particular relevance. Some wholesale customers may leave their suppliers and turn elsewhere for power. If they do, they will not receive service from plants to which they were forced to contribute capital. Alternatively, their supplier may decide to sell its interest in a plant or recommend cancellation of it. Prior to the recent abandonment of Seabrook Unit No. 2, NEPCO's CWIP filing indicated that it proposed to collect this rate for its interest in that facility, but the company also said:

> NEP(CO) has concluded that it would be advantageious (sic) for its customers if NEP(CO) could withdraw from ownership of Seabrook Unit 2. Thus NEP(CO) is attempting to sell its share of Unit 2 or, in the alternative, obtain cancellation of the unit.... New England Power Company, Docket ER83-647-50, Statement BM, p. 10. (emphasis supplied.)

Apparently, the utility did not think it was disadvantageous for its consumers to pay CWIP for this facility, nor is it likely that customers would receive a refund of any CWIP contribution made towards the cost of that plant.

There are other strong reasons for continued application of the "used and useful" concept. Plants are being constructed today to meet future demand. Given the mobility of the American population and the likelihood that facilities under construction will serve a broader customer base, it cannot be said that today's customers will also be the ones served tomorrow. Senior citizens, college students, or military personnel are among those unlikely to receive a full return on their CWIP investment.

The CWIP rule also violates another utility ratemaking principle. A fundamental responsibility of any regulatory commission is to protect consumers against the natural tendency of a monopoly to abuse its economic position. With CWIP, FERC has taken the opposite position -- it seeks to protect a monopoly against its consumers.

Michael Foley, of NARUC's staff, sets out in the article referred to previously, the basic standard that utility commissions should follow when they are besieged with requests for higher rates:

> Many seem to have forgotten that the purpose of our regulatory institutions is to serve as a surrogate for competition and not as a security blanket for utility executives and investors. "Electric Utility Financing -- Let's Ease Off the Panic Button," p. 23

In considering the needs of companies and their investors, "trade offs" must be evaluated. For investors, "trade offs" are defined in terms of risk. If investors want a higher return on their money, they must gamble a little more. But if they are conservative, they must expect a lower return on their investment. Generally, utilities have appealed to the latter type of investor.

Over the past several years, however, there has been one exception to this premise. Some financial institutions have considered investments in utilities with major construction programs, particularly those building nuclear plants, as somewhat risky. Regulatory delays, long construction times, and uncertainties over completion are among the major factors contributing to this perception. Thus, investors have demanded greater returns before providing capital to such utilities.

In response, FERC and state public utility commissions have authorized significantly higher rates of return. The average return on equity permitted by FERC and state commissions in 1983 was about 15.3 percent. At a time when the rate of inflation has been reduced substantially, this level of return appears generous.

In spite of higher yields, investors still assume some risk that a plant will b completed. The noncompletion of a plant could lower substantially investors' retur on their capital. Consequently, they have a vested interest in seeing that utility managements make sound decisions on the need for new capacity. Investors' scrutiny imposes an important discipline on managements.

At the wholesale level, however, FERC has shielded investors from some of these cancellation risks. With CWIP being added automatically to the rate base, investors will now earn a profit on a plant up to the point it is abandoned. If that event occurs, a Commission rule then permits a utility to recover from ratepayers the construction costs of a cancelled plant by allowing the company to amortize those costs over five years. In short, ratepayers will now largely bear the risk that a plant will one day go into service.

FERC's rule concedes that customers may find this an undesirable alternative as it acknowledges in this comment:

> ...a reduction in this risk of failure may be achieved principally by shifting that risk from investors to ratepayers, and any resulting saving in capital costs (from charging CWIP) is therefore a mixed blessing from the latter's standpoint. FERC Order No. 298, ft. 20.

VI. Allowance of CWIP Is Not Needed to Avert Power Shortages

In 1983, a Department of Energy report, entitled "The Future of Electric Power in America: Economic Supply for Economic Growth," reviewed the nation's electric power needs and the industry's ability to meet that demand. The DOE report contends that the industry's plans for net capacity additions are inadequate and, if additions to this supply are not made on schedule, then reliable electric service will be jeopardized in much of the nation. The department framed these issues in the following alarmist statements:

> -- "...the current excess of reserve capacity is likely to disappear by the end of the decade and leave utility managers and regulators in the difficult position of having to decide whose interests to protect;"
>
> -- the "inevitable result" of the current regulatory environment is likely to be "a less reliable, higher-cost electric system;"
>
> -- "...inevitable declines in service;" and
>
> -- "ominous implications for national economic growth."

In the context of utility rate issues such as CWIP, these conclusions have been described this way:

> If utilities can't charge higher prices, they won't be able to raise capital; if they can't raise capital, they won't be able to build needed powerplants; if they can't build new plants, they might run short of power. At best, they will have to keep running old plants - ones that burn oil - and there will be no protection from higher

> prices anyway. So give utilities the money now, and let them build their way out of the dilemna. Stelzer and Roe, "Viewpoint," Electrical World, May 1982, p. 59.

FERC says it has found a solution to this problem -- allow CWIP in wholesale rate base -- notwithstanding the fact that such sales represent only about 11.5 percent of the revenues of investor owned electric utilities. The Commission believes that utility managers have made short-term decisions to bolster their financial position, at the expense of making long-term investments in needed electric generating facilities. Unless utility managers and investors are assurec of receiving immediate returns on their investment through CWIP, they supposedly will not make the most economically efficient decisions.

Those who cry "shortage," however, have failed to learn from the industry's experiences of the past decade and how consumers have responded to changed conditions. Shimon Awerbuch describes the consumers' perspective well:

> Today's electric consumer has available a variety of substitutes whose costs, relative to electricity, are quickly declining.
>
> When I speak of substitutes(,)...I refer to an entire bundle of goods including insulation, new energy efficient appliances, lightbulbs, timers, and various control devices, both simple as well as highly sophisticated....The real commodity a consumer purchases from a utility company is not "electricity" per se, but the ability to accomplish tasks easily such as illuminating rooms, refrigerating and cooking foods, and heating water and space. As electric rates continue to increase, substitute(s)...,such as windmills and photovoltaics, additional insulation, solar water heaters, more efficient lighting, and more powerful control devices will all become increasingly attractive. This succession of events has the potential for permanently affecting the business of the electric utility industry as it is perceived today. "Industrial Maturation," p. 17.

This trend, he concludes, has "served to shift the demand curve for electricity to the left permanently, thus reflecting lower demand at all prices." Id. (emphasis supplied.) But Awerbuch also notes that "(f)or some reason, regulators and the industry have been slow to react to the softening demand for electricity and other forms of energy." Id., p. 18.

Awerbuch's perceptions on the importance of this shift for the industry are shared by four Florida private utility executives:

> The industry...will survive. But an electric utility in the year 2000 will be a very different critter than the utility of the 1970s, or 1980s. They will no longer be able to simply burn coal and oil and uranium to generate power. They must assess possibilities rooted in new and innovative technologies. They must market the wise use of electricity. They must become energy companies, not electric companies. "Electric Utilities in a State of Transition," *Public Utilities Fortnightly*, January 19, 1984, p. 22. (emphasis supplied.)

In the turbulent times in which the electric utilitiy industry has found itself during the past decade, projections of future demand have been exceptionally difficult to make, and the industry has repeatedly reduced its estimates of future requirements.

Because electricity supply is so vital to the economy, and because even under the most favorable circumstances about five years are required to install major economical new generation, I believe prudence would require the utility industry to plan on the basis of an increase in future demand of about 3 percent a year. This would parallel the anticipated growth in the Gross National Product, and would be consistent with the fact that in recent years there has been a 1:1 relationship between GNP and electricty consumption.

However, rapidly changing conditions make it imperative that this estimate be reevaluated continually, and adjustments made as warranted by new circumstances.

Recent experience tends to confirm the uncertainty of estimating demand. One would have expected, for example, that there would have been a large surge in electricty demand in 1983. The United States was recovering from its worst recession in 40 years. Furthermore, demand in 1982 was abnormally low, so that the increase in 1983 sales was calculated on a low base. Despite these circumstances, electricity output grew little more than 3-1/2 percent in 1983 -- still half its rate of the pre-embargo period, and about the same as the growth rate of GNP.

Looking at the most recent figures on consumption provides little guidance, except on one point: there continues to be a virtual 1:1 relationship between GNP and electricity demand. Preliminary estimates for the first quarter of 1984 show that electricity production increased about 8.3 percent from the first quarter of 1983 to the current quarter. Real increase in GNP for the first quarter was 7.4 percent, indicating that a 1 percent increase in real GNP produced a 1.1 percent increase in electricity demand. However, it is not anticipated that real GNP will continue to increase at this high rate. Most economists continue to predict a 3 percent growth rate in GNP for the remainder of this decade, indicating that the industry's projection of an approximately 3 percent increase in electricity demand is about right.

If one accepts the industry's most recent projections for growth in peak demand of 2.8 percent per year, it would appear that the United States in 1992 will have a reserve margin of 30 percent -- which is almost 50 percent more than has been customary even during periods of rapid growth in demand.

If it should appear that load will grow faster than anticipated, a variety of techniques and technologies are available to permit the industry to respond to changes in demand in a more flexible, less time-consuming and less capital-intensive manner than has been the case in the recent past. It is not necessary now to push the panic button and assume that there will be a shortage of electricity because 10 to 14 years are required to bring very large nuclear or coal-fired generating plants into service. Smaller conventional generating units, load management, conservation, use of renewable resources, new technologies such as the fuel cell, cogeneration, improved transmission that would permit better use of generating capacity, extending the life of existing power plants -- these are some of the techniques and technologies that can be brought into use economically, in a relatively short time frame, and without greater reliance on oil or natural gas.

Duke Power Co. is one investor owned utility which apparently has decided to take a more flexible approach to power supply planning. Last year, this company decided to cancel a nuclear power plant, Cherokee Unit No. 1. The company had already sunk $565 million into the plant, but decided to cancel when load forecasts based on current and predicted economic conditions showed that the unit would not be needed until 1995. Duke said that to prolong construction this long would skyrocket the unit's costs to $6 billion. In addition, this would cause Cherokee to lose its economic advantage over alternative types of generation. Based on its revised forecast for lower demand, Duke determined that it could meet its baseload demand from its other coal-fired plants, and that alternative generating capacity to meet fluctuating daily and seasonal peak demands could be built at half the cost of the Cherokee unit. Although fuel costs will be higher, the company said, "on balance, the overall costs will be lower."

From this evaluation, Duke said that it

> has about five years before it has to make any commitment to alternative generating capacity, giving company management time to assess future economic developments, electricity usage, and the regulatory climate.

The company concluded that cancellation of the Cherokee plant will benefit its customers by minimizing future rate increases, because alternative forms of generation will have a cost advantage greater than the cancellation costs of the Cherokee plant.

This analysis clearly demonstrates the need for a least-cost approach to meeting future electricity demand.

S. 1069 recognizes the importance of encouraging utilities to seek alternative, more flexible means of meeting electrical demand. Under the bill, FERC must find that utilities have made a genuine effort to seek less costly means of providing electricity before granting CWIP. In today's uncertain economic conditions, prudent management dictates that this be done before billions of dollars are expended on a power plant.

Neither APPA, nor the Members of Congress who support this bill, are alone in their belief that utilities must establish a new perspective on meeting consumer electricity demand. Wall Street recognizes that the long-term financial interests of the industry rest on lower load growth and a reduction in utility capital needs. As Merril Lynch reported

> ...It appears odd to find favor with a sector whose growth has tapered off dramatically, but in the case of the highly capital intensive utilities, lower growth rates ultimately mean that fewer generating plants will be needed. The bottom line is that on a relative basis, the industry is likely to raise less money than originally anticipated. In our mind, less financing should bring improved financial characteristics; the end result ought to be a more stable, healthy industry.

Merril Lynch also appears to place little credence in shortage claims. According to the investment firm, "the reasoning behind the hypothesis is sometimes sloppy and sometimes specious and the economic analysis sometimes superficial to nonexistent." It also cautions investors to "read the arguments carefully, take them seriously because the people making them are influential, remember the unstated assumptions that render the short-term shortage thesis questionable, and do not panic. The bull market for candles may be some years off." "Electric Utility Financing," p. 24. (emphasis supplied.)

In sum, within the focus of the debate before you today, as Shimon Awerbuch says:

> There is no way a regulatory body can protect the investor from the risks of changing consumer demand and changing technologies and costs. While it is possible for a commission to shift certain risks from shareholders to ratepayers such shifts will make a company less economically viable for the long run and will speed up its obsolescence -- a risk commissions cannot shift. "Industrial Maturation," p. 20. (emphasis in the original and supplied.)

VII. The Commission Has Abdicated Its Statutory Duties Under the Federal Power Act

FERC's handling of the CWIP issue raises a fundamental question of whether the agency is fulfilling its regulatory responsibilities.

In enacting the Federal Power Act, the Congress recognized that the purpose of utility regulation is to impose competitive forces on a natural monopoly. This responsibility was delegated to the Federal Power Commission and its successor, FERC. The Commission's duty is to set "just and reasonable" rates.

FERC's decision on CWIP fails to meets its statutory duties under the Federal Power Act. Rates that are based on automatic allowance of CWIP are not necessarily "just and reasonable." In many cases, allowance of such costs also will give private companies a substantial competitive advantage over their wholesale customers. Neither of these issues was adequately addressed in the rule.

VIII. There is a Stark Contrast Between Portection Offered by the FEPC Rule and S. 1069

A. The Commission and Its Rule

FERC, DOE and private utilities will argue that the Congress should defer to the Commission's judgment on the treatment of CWIP. As newly appointed FERC Chairman Raymond O'Connor wrote in a letter of February 6, 1984 to U.S. Representative Carlos Moorhead, "the final rule in Order No. 298 represents years of experience with the cost of financing a utility as it impacts wholesale electric rates."

While the Commission may have considered such costs in utility requests for increases in wholesale rates, its experience within the specific context of its previous CWIP policy was quite limited. Only six private utilities applied for CWIP on the basis of "severe financial difficulty" between 1976 and 1983. Of these cases, FERC found in four instances that no such hardship existed. In another case, involving Public Service of New Hampshire, an Administrative Law Judge found that the utility was in bad financial straits, but the case was subsequently settled without inclusion of CWIP. And, in the final case, decided after FERC announced its new rule, the Commission allowed Montaup Electric to collect a limited percentage of CWIP under this criterion.

FERC's experiences under its old policy raises several perplexing questions. How much insight into the industry's financial condition did the Commission gain from these six cases? And why did only six utilities apply? Were private companies unable to seek relief from high inflation and high interest rates because of the alleged vagaries of the Commission's financial standard? Or were they unable to meet FERC's evidentiary standard requiring them to prove financial hardship by clear and convincing facts? If a company had made the appropriate showing, we find it hard to believe that FERC would have turned a "deaf ear" to its plea for extraorinary rate relief.

In spite of this limited experience, FERC went ahead in July, 1981, to define "severe financial difficulty." The Commission proposed a two-pronged test related to utilities' bond ratings and amount of CWIP relative to their jurisdictional rate base. In response, FERC received voluminous comments, heard oral argument from many witnesses, and supposedly took nearly two years to study this issue. From this, many will argue that the Commission rendered a well reasoned and sound decision.

But what did FERC actually accomplish?

The answer lies in the substance of the rule -- 50 percent virtually automatic inclusion of CWIP for construction of generation and transmission facilities.

What sound use of experience and expertise is required to arrive at such a judgment? We believe the answer is "none." No profound regulatory judgment is required to grant an arbitrary, fixed percentage of CWIP. No special experience is needed to set that figure at 50 percent. And certainly no unique insight is required to grant such relief automatically. In short, the Congress owes no deference to the Commission on this issue.

B. S. 1069 Offers a Judicious Course For FERC Treatment of CWIP

When a regulatory agency does not fulfill its reponsibility to make objective, well reasoned judgments, Congress must step in, and provide proper guidelines. FERC's rulemaking on CWIP falls into this category.

S. 1069 provides Congress with an excellent vehicle for restoring the proper regulatory focus to the CWIP issue. The bill provides a sound, well reasoned approach to the treatment of CWIP in wholesale rate base. It recognizes, as the Commission did until recently, that it is an extraordinary form of rate relief which should only be awarded in demonstrated cases of utility financial need, and where important public purposes are served.

The bill initially does not disturb existing regulations permitting up to 100 percent of CWIP for pollution control facilities and conversion of oil- or gas-fired plants to other fuels.

On the issue of utilities in "severe financial difficulty," S. 1069 makes private utilities and FERC do their regulatory "homework":

1. A utility may apply for CWIP relief if it is unable to meet its minimum indenture requirements. Every private utility has a longstanding ratio written into its bond indentures specifying the coverage it must have relative to its existing debt service before additional bonds may be issued. This is a relatively easy figure to calculate and an objective measurement of a company's financial position.

2. Utilities must prepare a cost/benefit analysis of the impact of including CWIP in rate base. If the utilities are correct that liberal allowance of CWIP is cheaper in the long-term to consumers, there is no reason why they should not be able to prove this proposition in individual rate cases.

3. Utility companies must provide a statement demonstrating that construction of a facility is consistent with a least-cost energy strategy. While FERC requires such a statement, to some degree, under its new rule, the regulation lacks specificity and a

showing that a utility's construction program is consistent with that least-cost energy program.

4. Utilities must show why CWIP, rather than other financial or regulatory actions, is needed to prevent "severe financial difficulty." According to a recent survey in Electrical World, many utilities are pursuing innovative financial arrangements to meet their cash needs. FERC also has provided utilities with many other regulatory provisions which should enable them to earn their authorized rates of return.

5. FERC must find that without CWIP, a utility will be in "severe financial difficulty." The Commission also must find that CWIP will alleviate such hardship. Utilities can provide FERC with the financial data needed to make these determinations and, once this is done, the Commission can decide whether CWIP in wholesale rate base will actually help cure this alleged financial hardship.

6. The Commission must find that a company has initiated programs to acquire least-cost energy resources and its construction plans are consistent with those programs. Many state commissions already require utilities to justify the need for their facilities and to show that their plans are consistent with a least-cost energy strategy. As a practical matter, the FERC rule contains no such requirement.

7. If an allegation is made that a utility has been mismanaged, FERC must find that this will not prevent future restoration of the company's financial health. This is basic, sound regulatory policy. If a company has been poorly managed, incentives

such as CWIP should not be given to continue such policies, nor should wholesale customers have to pay for such mistakes.

8. The Commission may not allow a utility to collect CWIP if it will create a "price squeeze," if it exceeds the amounts needed to correct a company's financial hardship, or if it represents costs imprudently incurred. The rationale for these requirements has been discussed in previous portions of this statement.

Viewed in the light of the above considerations, S. 1069 does not put Congress in the business of deciding rate cases. Instead, it guides the Commission to ensure that it is enforcing the standards of the Federal Power Act properly.

Sound utility regulation demands the procedures and criteria set forth in S. 1069. APPA strongly urges members of the subcommittee and the entire Senate to take the opportunity to address consumer concerns over rising electric utility rates by giving this legislation their favorable consideration. APPA also supports H.R. 555, which is similar in most respects to S. 1069.

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May 1, 1984

The Honorable Frank Murkowski
Chairman, Senate Subcommittee on
Energy Regulation
360 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Murkowski:

During the Subcommittee on Energy Regulation's recent hearing on legislation restricting the Federal Energy Regulatory Commission's (FERC) authority to allow construction work in progress (CWIP) in wholesale rates, you asked whether this rule was in the financial interests of consumers.

In response, APPA's consultant, J. Bertram Solomon, testified that CWIP was more costly to consumers than the traditional utility ratemaking practice of charging for a plant once it is brought into service. Solomon used an analysis comparing 100 percent CWIP versus no CWIP in rate base to demonstrate this point. However, you asked if this also would be true under FERC's rule allowing private utilities half their CWIP costs. Based on a new analysis by Solomon, the answer remains the same. CWIP is more costly to consumers when the financial impact is evaluated in present value terms.

I would respectfully request that J. Bertram Solomon's testimony and analyses, using both 100 and 50 percent CWIP versus no CWIP, be placed into the record. I also am providing the subcommittee with 25 copies to distribute among committee members.

If you or your staff have additional questions concerning this issue, please don't hesitate to contact me.

Sincerely,

Alex Radin

Alex Radin
Executive Director

cc: J. Bertram Solomon

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Atlanta, GA 30367-8301
(404) 352-9200

Southern Engineering

April 23, 1984

Alex Radin, Executive Director
American Public Power Association
2301 M Street, N.W.
Washington, D.C. 20037

RE: Graphs Comparing the Present Value of the Cumulative Revenue Requirements (or Customer Costs) Under 50% versus 0% CWIP In Rate Base

Dear Alex:

During the presentation of my testimony before the Senate Subcommittee on Energy Regulation on April 12, Chairman Murkowski asked for a comparison of the cost to consumers of 50% of CWIP in rate base versus no CWIP in rate base. I am enclosing a graph labeled Exhibit C which shows this comparison. Just as I explained during my testimony, the lines showing the revenue requirements to be collected from consumers are closer together than those on my graph comparing 100% CWIP in rate versus no CWIP in rate base on a present value basis. However, as I also explained, just as with the 100% versus 0% case, the graph shows that including CWIP in rate base is more costly to consumers in each and every year of the construction period and the service life until the very last year, when they become equal. Thus, as with the 100% versus 0% case, a consumer would have to be served by the utility for the entire 37-year construction period/service life of the unit and the utility would have to refrain from building any additional facilities during that period for the consumer to even get to the breakeven point where including CWIP, or a portion of CWIP, in rate base cost him/her the same as not including CWIP in rate base.

I am also including Table 4 which shows the development of the revenue requirements under the inclusion of 50% of CWIP in rate base.

If you have any questions concerning my analysis, please give me a call.

Sincerely,

J Bertram Solomon

J. Bertram Solomon, Manager
Economic & Regulatory Services

JBS/fc
Enclosures

Exhibit C

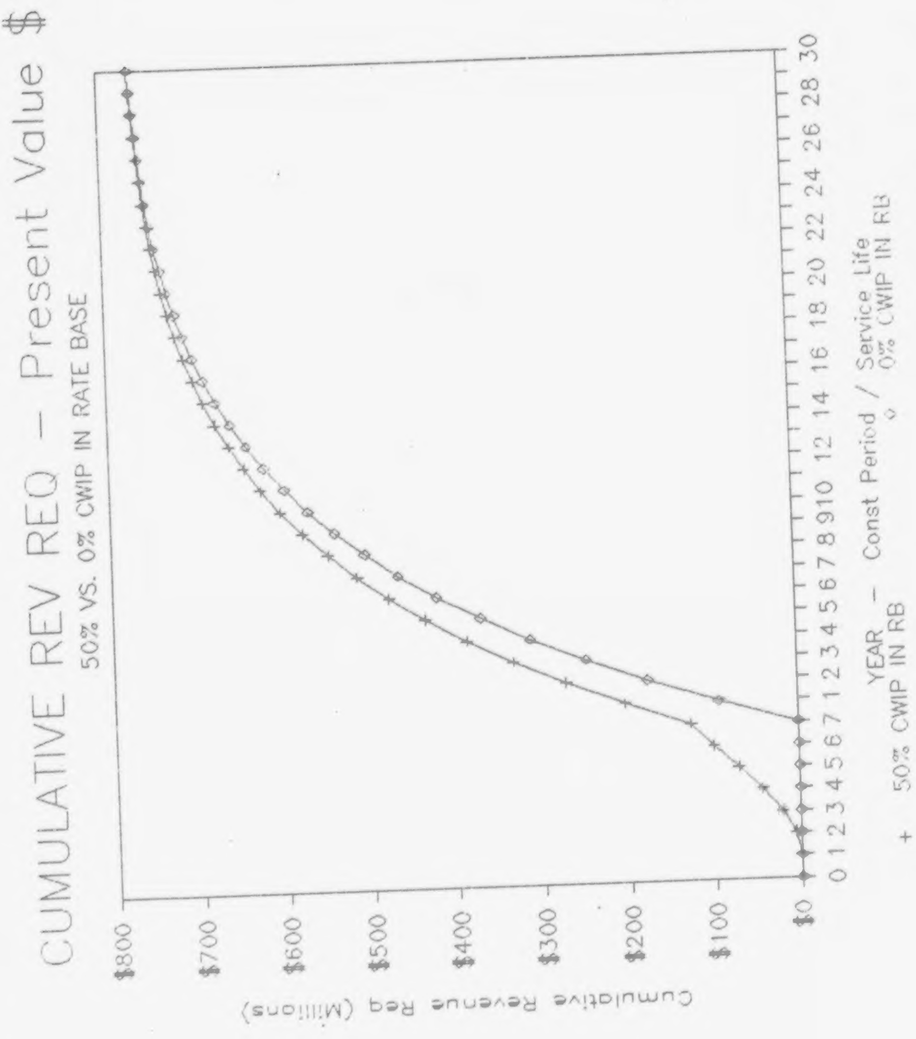

CUMULATIVE REV REQ - Present Value $
50% VS. 0% CWIP IN RATE BASE
Cumulative Revenue Req (Millions)
$800
$700
$600
$500
$400
$300
$200
$100
$0
0 1 2 3 4 5 6 7 1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30
YEAR - Const Period / Service Life
+ 50% CWIP IN RB
◇ 0% CWIP IN RB

Table 4

REVENUE REQUIREMENTS UNDER
50% OF CWIP IN RATE BASE; 10% RATE OF RETURN; 10% DISCOUNT RATE
(Dollars in Millions)

YEAR	CONSTRUCTION VS OPERATION PERIOD	ANNUAL CONSTRUCTION COSTS	CWIP BALANCE	AFUDC	RATE BASE	RETURN	DEPRECIATION	ANNUAL REVENUE REQUIREMENT	CUMULATIVE REVENUE REQUIREMENT	PRESENT VALUE OF ANN REV RQRMT	CUME PRESENT VALUE OF ANN REV RQRMT
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
0	0	0	0.0	0.0	0.0	0.0	0.0			0.00	0.00
1	1	10	10.0	0.5	5.0	0.5	0.0	0.5	0.5	0.45	0.45
2	2	120	130.5	6.6	65.0	6.5	0.0	6.5	7.0	5.37	5.83
3	3	260	397.1	20.2	195.0	19.5	0.0	19.5	26.5	14.65	20.48
4	4	300	717.3	37.2	345.0	34.5	0.0	34.5	61.0	23.56	44.04
5	5	200	954.5	50.9	445.0	44.5	0.0	44.5	105.5	27.63	71.67
6	6	100	1105.4	61.0	495.0	49.5	0.0	49.5	155.0	27.94	99.61
7	7	10	1176.5	67.6	500.0	50.0	0.0	50.0	205.0	25.66	125.27
8	1				1244.1	124.4	41.5	165.9	370.9	77.39	202.66
9	2				1202.6	120.3	41.5	161.7	532.6	68.59	271.25
10	3				1161.2	116.1	41.5	157.6	690.2	60.76	332.01
11	4				1119.7	112.0	41.5	153.4	843.6	53.78	385.79
12	5				1078.2	107.8	41.5	149.3	992.9	47.57	433.36
13	6				1036.8	103.7	41.5	145.1	1138.1	42.04	475.40
14	7				995.3	99.5	41.5	141.0	1279.1	37.13	512.53
15	8				953.8	95.4	41.5	136.9	1415.9	32.76	545.29
16	9				912.4	91.2	41.5	132.7	1548.6	28.88	574.17
17	10				870.9	87.1	41.5	128.6	1677.2	25.43	599.61
18	11				829.4	82.9	41.5	124.4	1801.6	22.38	621.98
19	12				787.9	78.8	41.5	120.3	1921.9	19.66	641.65
20	13				746.5	74.6	41.5	116.1	2038.0	17.26	658.91
21	14				705.0	70.5	41.5	112.0	2150.0	15.13	674.04
22	15				663.5	66.4	41.5	107.8	2257.8	13.25	687.28
23	16				622.1	62.2	41.5	103.7	2361.5	11.58	698.86
24	17				580.6	58.1	41.5	99.5	2461.0	10.10	708.97
25	18				539.1	53.9	41.5	95.4	2556.4	8.80	717.77
26	19				497.6	49.8	41.5	91.2	2647.6	7.66	725.43
27	20				456.2	45.6	41.5	87.1	2734.7	6.64	732.07
28	21				414.7	41.5	41.5	82.9	2817.6	5.75	737.82
29	22				373.2	37.3	41.5	78.8	2896.4	4.97	742.79
30	23				331.8	33.2	41.5	74.6	2971.1	4.28	747.06
31	24				290.3	29.0	41.5	70.5	3041.6	3.67	750.74
32	25				248.8	24.9	41.5	66.4	3107.9	3.14	753.88
33	26				207.4	20.7	41.5	62.2	3170.1	2.68	756.56
34	27				165.9	16.6	41.5	58.1	3228.2	2.27	758.83
35	28				124.4	12.4	41.5	53.9	3282.1	1.92	760.75
36	29				82.9	8.3	41.5	49.8	3331.9	1.61	762.36
37	30				41.5	4.1	41.5	45.6	3377.5	1.34	763.70
37	37	1000	1244.1	244.1	.0	2133.4	1244.1	3377.5	3377.5	763.70	763.70

STATEMENT OF J. BERTRAM SOLOMON
MANAGER, ECONOMIC & REGULATORY SERVICES
SOUTHERN ENGINEERING COMPANY
On
S. 817, S. 1069 AND H.R. 555
"CONSTRUCTION WORK IN PROGRESS POLICY ACT OF 1983"
BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
APRIL 12, 1984

My name is J. Bertram Solomon. I am manager of the Economic and Regulatory Services department of Southern Engineering Company, a full service financial, economic and engineering consulting firm. My particular area of specialty is electric utility ratemaking. I have provided expert ratemaking testimony before a number of state public utility commissions and before the Federal Energy Regulatory Commission (FERC). The areas of expert testimony I have presented include: the proper ratemaking treatment of accounting practices and the effects of appropriate alternative accounting methods on expenses, income taxes, revenues, rate base and cost of capital; proper methods of cost allocation, required rates of return and margin levels, proper methods of measuring working capital requirements, and rate design. I have also prepared and filed comments before the FERC in several generic rulemaking proceedings. Additionally, I have participated in preparing and

presenting economic feasibility analyses for the joint ownership of generating and transmission facilities for combinations of investor-owned and publically-owned electric utilities.

My company has been involved in the "Great CWIP Debate" since the early 1970's when the Federal Power Commission (now the FERC) first initiated a generic rulemaking proceeding to determine the appropriate treatment of construction work in progress (CWIP). I will spare you from a blow-by-blow description of the federal litigation of the appropriate treatment of CWIP over the years, but I do want to point out that, until the recent ruling of the FERC in its Order No. 298 of May 16, 1983, the federal authorities have consistently held that CWIP should not be included in the rate base of utilities for purposes of establishing just and reasonable rates unless it was clearly demonstrated by the utility that its financial viability depended upon it being allowed to include CWIP in its rate base. The prior FERC (and FPC) policy of excluding CWIP from rate base was rooted primarily in the time-tested ratemaking standard that only investment in facilities which are "used and useful" for current service to customers should be included in a utility's rate base. Simply put, the "used and useful" standard requires that facilities must be currently useful for and used in providing service to the utility's customers before the utility could earn a current return on its investment in those facilities through the inclusion of that investment in its rate base.

The investor-owned electric utilities are urging the inclusion of CWIP

in rate base because they will gain hundreds of millions of dollars in increased rates from it. One of their primary arguments is that it is cheaper for the customers of the utilities if CWIP is included in rate base. This is definitely not the case. And it is this erroneous contention that I want to discuss with you today. The Edison Electric Institute (EEI), on behalf of its member investor-owned electric utilities, constructed a model for comparing the rates to consumers with CWIP included in rate base versus the cost to consumers with CWIP not included in rate base for use in its lobbying efforts when H.R. 555 was being considered by the House of Representatives. This model purportedly proved the utilities' contention that including CWIP in rate base was less costly to consumers. Indeed, EEI's model does make it appear that including CWIP in rate base is less costly; however, there is a very dramatic flaw in EEI's model. That flaw is that the model makes the assumption that money has no time value to the consumers of the utilities.

Obviously, this assumption is wrong. Almost every financial decision made in our economy today is based upon either an explicit or an implicit recognition of the time value of money. This is true from the most basic level of our economy, a single individual, to giant businesses such as General Motors, to the federal government. A rational person would not take his life savings down to the bank and say to the banker, "here are my life savings, keep them for me for a few years when I will be back to pick them up." Such a person would expect to be paid interest on his money while it was in the possession of the banker. A large corporation

does not invest its capital in new facilities without first doing detailed studies to determine which investment alternative will provide the highest expected rate of return over time on the money it has to invest. Finally, I am sure all of you on this Subcommittee are vitally concerned with the impact the time value of money has on the budget decisions which face the Congress and the President. I know that you would not think of voting on a budget package without considering the effect it will have on the interest payments the government will have to make as a result of financing any deficits which are expected to result from the budget package.

In fact, the fundamental concept being taught in finance courses in our universities today centers around the time value of money and how to explicitly take this fact into consideration in making financial decisions. This can be done in more than one way, but a present value analysis is usually done. It is certainly wrong to assume that money has no time value to consumers of electricity.

In order to demonstrate the result of making this erroneous assumption, I have prepared two graphs using the material prepared by EEI. The only difference between the two graphs is that one does not take into consideration the time value of money to the customers of the utility and the second graph does take into consideration the time value of money to the customers of the utility. The graphs are based upon a single plant which takes seven years to construct and which has a 30-year service life. The graphs show the revenue requirements to be collected from

customers over the entire construction and service periods under both alternative methods of treating CWIP. The two graphs are marked as Exhibit A and Exhibit B. The information from which the graphs were constructed is contained in the attached Tables 1 and 2. The nominal annual and cumulative revenue requirements were taken directly from the EEI handout. The present value of the annual and cumulative revenue requirements were developed by applying a 10% discount rate to EEI's nominal dollars. This discount rate assumes that the time value of money to the consumers is the same as the rate of return required by the utility.

The first graph, Exhibit A, reproduces EEI's handout. It shows that, in terms of nominal dollars, the utility's revenues to be recovered from its customers would be higher, under the inclusion of CWIP in rate base, during the seven year construction period, but would be lower during the remaining 30-year useful life of the facility during which it would be providing service than the revenues which would be collected if CWIP were not included in rate base. If CWIP is not included in rate base, there are no revenue collections from customers during the seven-year construction period. On the other hand, when CWIP is included in rate base, there are significant revenue collections from customers during the seven-year construction period; however, the revenue collections during the 30-year service life are shown to be smaller under the CWIP in rate base method. The total revenues collected under the CWIP in rate base method are $2,960,000,000 - $410,000,000 during the seven-year construction period and $2,550,000,000 during the 30-year service life. With CWIP not included in rate base, $3,794,500,000 in revenues would

be collected during the service life of the plant. This is the the end of EEI's analysis and certainly gives the appearance that including CWIP in rate base is the less costly alternative. However, as I said earlier, the analysis should not end here since, to this point, the time value of money to the consumers has not been taken into consideration. Obviously, the dollars collected during the construction period are worth more than the dollars collected during the service period and this fact has been ignored.

To correct this situation, I have prepared the graph shown as Exhibit B. This exhibit shows the present value of the cumulative revenue requirements under the two alternative methods of treating CWIP over the entire construction and service life of the facilities. The only thing I have changed from the duplicate of EEI's graph, in Exhibit A, is to recognize the time value of money to the customers of the utility. In order to do this I have discounted the revenue requirements at the same 10% rate of return used for the utility. Exhibit B also shows the cumulative difference between the revenue requirements under the two alternatives rather than just the individual annual revenue requirements.

This exhibit dramatically demonstrates the fact that, when the time value of money to the consumers is recognized, including CWIP in rate base is more costly to consumers over the entire construction period and service life of the facilities. It is not until the thirty-seventh year after the beginning of construction that the cumulative revenue requirements

under both methods would be the same. This means that for a consumer to just benefit equally from either method he would have to remain a customer of the utility for all of these 37 years. It also means that the utility serving this consumer would have to refrain from building any additional facilities because, if the utility did build additional facilities, the consumer's break even point would be pushed out even farther - to the end of the service life of the new facility.

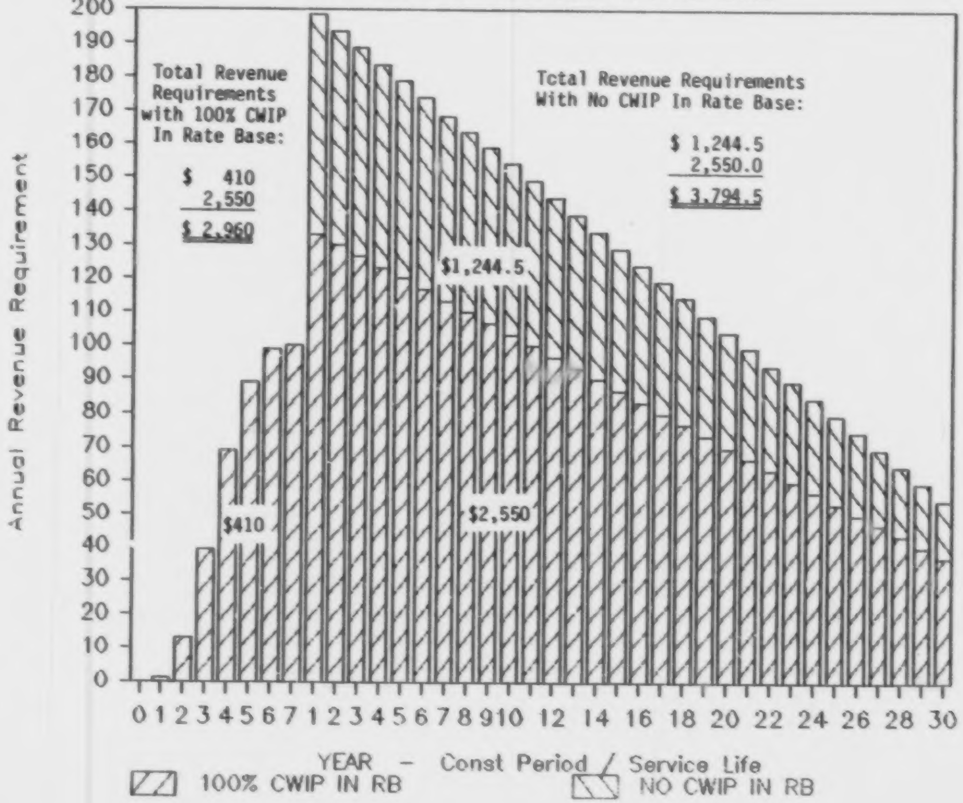
There is only one conclusion which can be drawn from these graphs; i.e., that, when the time value of money to the customers of the utilities is taken into consideration, including CWIP in rate base will always be more costly to consumers than not including CWIP in the rate base.

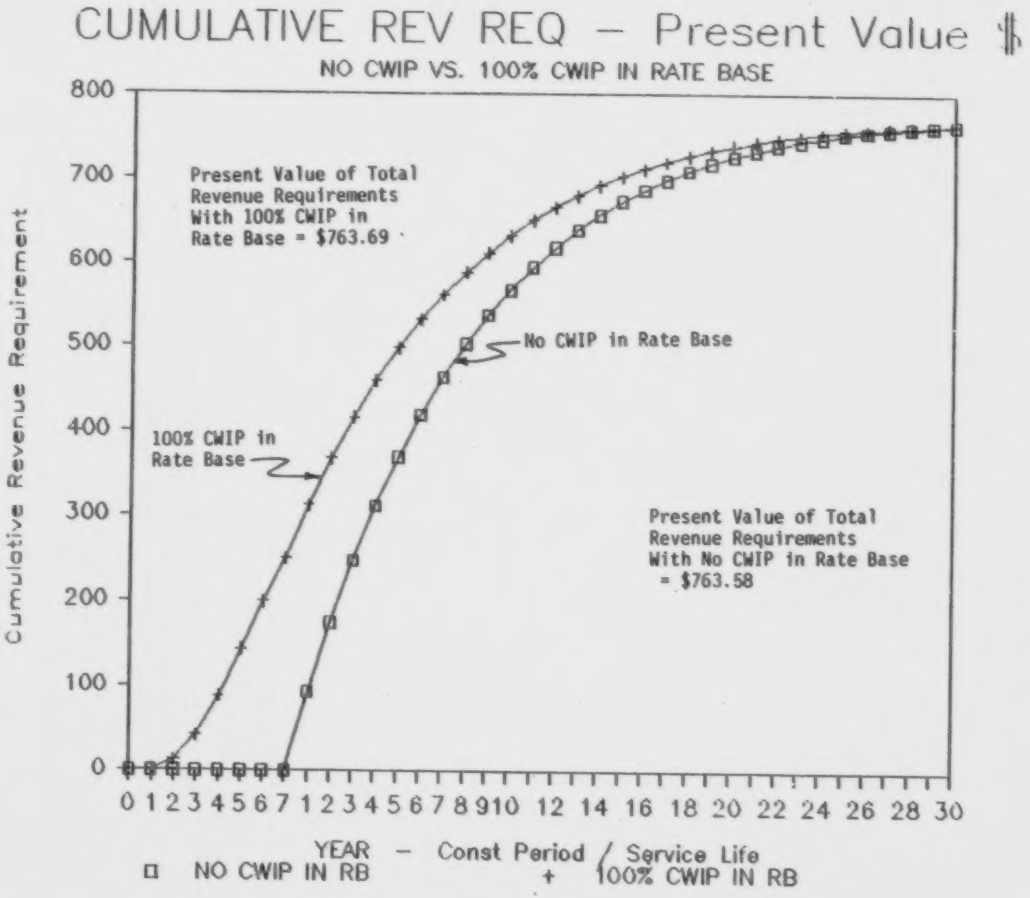
EXHIBIT B

EXHIBIT A

ANNUAL REV REQUIREMENTS – Nominal $

NO CWIP VS. 100% CWIP IN RATE BASE





CUMULATIVE REV REQ – Present Value $

NO CWIP VS. 100% CWIP IN RATE BASE

Present Value of Total Revenue Requirements With 100% CWIP in Rate Base = $763.69

Present Value of Total Revenue Requirements With No CWIP in Rate Base = $763.58

TABLE 1

REBUTTAL TO EEI CWIP MODEL SOUTHERN ENGINEERING COMPANY

REVENUE REQUIREMENTS UNDER
100% OF CWIP IN RATE BASE; 10% RATE OF RETURN; 10% DISCOUNT RATE
(Dollars in Millions)

YEAR (a)	CONSTRUCTION VS OPERATION PERIOD (b)	ANNUAL REVENUE REQUIREMENT (c)	CUMULATIVE REVENUE REQUIREMENT (d)	PRESENT VALUE OF ANN REV RQRMT (e)	CUME PRESENT VALUE OF ANN REV RQRMT (f)
0	0			0.00	0.00
1	1	1.0	1.0	0.91	0.91
2	2	13.0	14.0	10.74	11.65
3	3	39.0	53.0	29.30	40.95
4	4	69.0	122.0	47.13	88.08
5	5	89.0	211.0	55.26	143.34
6	6	99.0	310.0	55.88	199.23
7	7	100.0	410.0	51.32	250.54
8	1	133.3	543.3	62.19	312.73
9	2	130.0	673.3	55.13	367.86
10	3	126.7	800.0	48.85	416.71
11	4	123.3	923.3	43.22	459.93
12	5	120.0	1,043.3	38.24	498.16
13	6	116.7	1,160.0	33.80	531.96
14	7	113.3	1,273.3	29.84	561.80
15	8	110.0	1,383.3	26.33	588.13
16	9	106.7	1,490.0	23.22	611.35
17	10	103.3	1,593.3	20.44	631.79
18	11	100.0	1,693.3	17.99	649.78
19	12	96.7	1,790.0	15.81	665.59
20	13	93.3	1,883.3	13.87	679.46
21	14	90.0	1,973.3	12.16	691.62
22	15	86.7	2,060.0	10.65	702.27
23	16	83.3	2,143.3	9.30	711.57
24	17	80.0	2,223.3	8.12	719.69
25	18	76.7	2,300.0	7.08	726.77
26	19	73.3	2,373.3	6.15	732.92
27	20	70.0	2,443.3	5.34	738.26
28	21	66.7	2,510.0	4.63	742.89
29	22	63.3	2,573.3	3.99	746.88
30	23	60.0	2,633.3	3.44	750.32
31	24	56.7	2,690.0	2.95	753.27
32	25	53.3	2,743.3	2.52	755.80
33	26	50.0	2,793.3	2.15	757.95
34	27	46.7	2,840.0	1.83	759.78
35	28	43.3	2,883.3	1.54	761.32
36	29	40.0	2,923.3	1.29	762.61
37	30	36.7	2,960.0	1.08	763.69
37	37	2,960.0	2,960.0	763.69	763.69

Note: Revenue requirements in columns C and D are from EEI handout

TABLE 2

REBUTTAL TO EEI CWIP MODEL   SOUTHERN ENGINEERING COMPANY

REVENUE REQUIREMENTS UNDER
NO CWIP IN RATE BASE; 10% RATE OF RETURN; 10% DISCOUNT RATE
(Dollars in Millions)

YEAR (a)	CONSTRUCTION VS OPERATION PERIOD (b)	ANNUAL REVENUE REQUIREMENT (c)	CUMULATIVE REVENUE REQUIREMENT (d)	PRESENT VALUE OF ANN REV RQRMT (e)	CUME PRESENT VALUE OF ANN REV RQRMT (f)
0	0			0.00	0.00
1	1	0	0	0.00	0.00
2	2	0	0	0.00	0.00
3	3	0	0	0.00	0.00
4	4	0	0	0.00	0.00
5	5	0	0	0.00	0.00
6	6	0	0	0.00	0.00
7	7	0	0	0.00	0.00
8	1	198.4	198.4	92.56	92.56
9	2	193.4	391.8	82.02	174.58
10	3	188.5	580.3	72.67	247.25
11	4	183.5	763.8	64.32	311.57
12	5	178.6	942.4	56.91	368.47
13	6	173.6	1,116.0	50.29	418.76
14	7	168.6	1,284.6	44.40	463.16
15	8	163.7	1,448.3	39.19	502.35
16	9	158.7	1,607.0	34.54	536.88
17	10	153.8	1,760.8	30.43	567.31
18	11	148.8	1,909.6	26.76	594.07
19	12	143.8	2,053.4	23.51	617.59
20	13	138.9	2,192.3	20.65	638.23
21	14	134.0	2,326.3	18.11	656.34
22	15	129.0	2,455.3	15.85	672.19
23	16	124.0	2,579.3	13.85	686.04
24	17	119.0	2,698.3	12.08	698.12
25	18	114.1	2,812.4	10.53	708.65
26	19	109.1	2,921.5	9.15	717.80
27	20	104.2	3,025.7	7.95	725.75
28	21	99.2	3,124.9	6.88	732.63
29	22	94.2	3,219.1	5.94	738.57
30	23	89.3	3,308.4	5.12	743.69
31	24	84.3	3,392.7	4.39	748.08
32	25	79.4	3,472.1	3.76	751.84
33	26	74.4	3,546.5	3.20	755.04
34	27	69.4	3,615.9	2.72	757.76
35	28	64.5	3,680.4	2.30	760.05
36	29	59.5	3,739.9	1.92	761.98
37	30	54.6	3,794.5	1.61	763.58
37	37	3,794.5	3,794.5	763.58	763.58

Note: Revenue requirements in columns C and D are from EEI handout

TABLE 3

REBUTTAL TO EEI CWIP MODEL SOUTHERN ENGINEERING COMPANY

DIFFERENCE BETWEEN REVENUE REQUIREMENTS UNDER
100% OF CWIP IN RATE BASE; 10% RATE OF RETURN; 10% DISCOUNT RATE
LESS
NO CWIP IN RATE BASE; 10% RATE OF RETURN; 10% DISCOUNT RATE
(Dollars in Millions)

YEAR (a)	CONSTRUCTION VS OPERATION PERIOD (b)	ANNUAL REVENUE REQUIREMENT (c)	CUMULATIVE REVENUE REQUIREMENT (d)	PRESENT VALUE OF ANN REV RQRMT (e)	CUME PRESENT VALUE OF ANN REV RQRMT (f)
0	0				
1	1	1.0	1.0	0.91	0.91
2	2	13.0	14.0	10.74	11.65
3	3	39.0	53.0	29.30	40.95
4	4	69.0	122.0	47.13	88.08
5	5	89.0	211.0	55.26	143.34
6	6	99.0	310.0	55.88	199.23
7	7	100.0	410.0	51.32	250.54
8	1	(65.1)	344.9	(30.37)	220.17
9	2	(63.4)	281.5	(26.89)	193.29
10	3	(61.8)	219.7	(23.83)	169.46
11	4	(60.2)	159.5	(21.10)	148.36
12	5	(58.6)	100.9	(18.67)	129.69
13	6	(56.9)	44.0	(16.48)	113.21
14	7	(55.3)	(11.3)	(14.56)	98.64
15	8	(53.7)	(65.0)	(12.86)	85.79
16	9	(52.0)	(117.0)	(11.32)	74.47
17	10	(50.5)	(167.5)	(9.99)	64.48
18	11	(48.8)	(216.3)	(8.78)	55.70
19	12	(47.1)	(263.4)	(7.70)	48.00
20	13	(45.6)	(309.0)	(6.78)	41.22
21	14	(44.0)	(353.0)	(5.95)	35.28
22	15	(42.3)	(395.3)	(5.20)	30.08
23	16	(40.7)	(436.0)	(4.55)	25.54
24	17	(39.0)	(475.0)	(3.96)	21.58
25	18	(37.4)	(512.4)	(3.45)	18.12
26	19	(35.8)	(548.2)	(3.00)	15.12
27	20	(34.2)	(582.4)	(2.61)	12.51
28	21	(32.5)	(614.9)	(2.25)	10.26
29	22	(30.9)	(645.8)	(1.95)	8.31
30	23	(29.3)	(675.1)	(1.68)	6.63
31	24	(27.6)	(702.7)	(1.44)	5.19
32	25	(26.1)	(728.8)	(1.24)	3.96
33	26	(24.4)	(753.2)	(1.05)	2.91
34	27	(22.7)	(775.9)	(0.89)	2.02
35	28	(21.2)	(797.1)	(0.75)	1.26
36	29	(19.5)	(816.6)	(0.63)	0.63
37	30	(17.9)	(834.5)	(0.53)	0.11
37	37	(834.5)	(834.5)	0.1	0.1

Senator MURKOWSKI. Mr. Stroup, please.

STATEMENT OF LOUIS STROUP, JR., EXECUTIVE DIRECTOR, KANSAS MUNICIPAL UTILITIES, INC.

Mr. STROUP. Thank you, Mr. Chairman.

My name is Louis Stroup, Jr. I would just like to mention to the subcommittee and chairman, we have more than 100 municipal electric systems in Kansas, and 68 of these purchase all their power wholesale and were among the first in the Nation to be affected by the 1983 FERC rule.

This rule replaces 24 of our utilities purchasing power from Kansas Gas & Electric in a very serious anticompetitive position.

This is compounded by a Kansas statute which prohibits inclusion of CWIP in companies' retail rates until 12 months prior to the completion of a project.

On July 15th, 1983, Kansas Gas & Electric filed a wholesale rate case request before FERC, asking for approximately $4 million. Nearly $1.7 million, or 42 percent, of this request was attributed to CWIP costs allowed by the new FERC rule.

The Commission permitted that rate increase to become effective notwithstanding the fact that it violates any reasonable interpretation of the Commission's 6-percent ceiling on increases attributable to CWIP.

The 1.7 million attributed to CWIP increases the total wholesale revenues by 6 percent.

However, some wholesale customers' rates were not increased at all, or were not increased proportionally. Consequently, the rates for all municipal wholesale customers increased by more than 9 percent because of CWIP and, in particular, the rates for full requirements municipal utilities are being increased almost 12 percent.

Thus, the 6-percent cap appears to be illusory and the anticompetitive affects far greater than the Commission would have you believe.

Since the 24 municipally owned utilities are now paying for CWIP, while KGE's retail ratepayers are not, these communities have been placed in a price squeeze.

Their retail rates have gone up to reflect the inclusion of CWIP, while those of KGE's retail consumers have not been increased similarly.

The municipalities also have been put at a disadvantage in attracting new industries and businesses. Most of these communities are small and the loss of even one business or industry could have a very damaging affect on the community's economic health and employment situation.

Ironically, this increase will have a minimal affect on KGE's financial position. According to the company's 1983 annual report, street lighting, wholesale, and other revenues accounted for only 12 percent of the company's sources of revenues.

Moreover, the company appears to be in good financial health. Wilson Cadman, chairman of the board and president of KGE reported to the shareholders that the company's return average common equity was up in 1983 to 15.8 percent, and the net income in 1983 rose to $107.5 million, an increase of slightly $1 million in 1983.

We feel Congress must act now to remedy this inequity and ensure that competition remains among the various segments of the electric industry.

S. 1069 and H.R. 555 would go a long way toward maintaining this vital competition in the industry, and hopefully eliminate the problems now being faced by our small utilities purchasing from KGE and yet would retain the ability under FERC to allow CWIP on a case-by-case basis if a utility demonstrated a genuine financial need.

[The prepared statement of Mr. Stroup follows:]

Statement
of
Louis Stroup, Jr.
Kansas Municipal Utilities, Inc.
on
S. 1069 and H.R. 555
The "Construction Work in Progress Policy Act of 1983"
Subcommittee on Energy Regulation
Senate Energy and Natural Resources Committee

April 12, 1984

Mr. Chairman, members of the subcommittee, I am Louis Stroup, Jr., executive director of Kansas Municipal Utilities, Inc. (KMU), a statewide association of municipally-owned electric, gas and water systems. Our 108 member cities serve more than 827,000 Kansans.

KMU is a member of the American Public Power Association, the national service organization representing more than 1,750 publicly owned electric utilities in 48 states, Puerto Rico, Guam, American Samoa, and the Virgin Islands.

Over 100 municipal electric systems in Kansas -- 68 of which purchase all of their power requirements at wholesale, and the remainder of which generate part of their power requirements -- are directly affected by the legislation before you today.

Municipally owned electric utilities in Kansas which buy power at wholesale were among the first in the nation to be affected by the 1983 Federal Energy Regulatory Commission (FERC) rule. This rule abandoned FERC's previous policy of allowing construction work in progress for pollution control facilities, oil- or gas-fired plants conversions to other fuels, and utilities demonstrating "severe financial difficulty."

The FERC rule places 24 of our utilities purchasing power from Kansas Gas & Electric (KGE) in a very serious anticompetitive position. This is compounded by a Kansas statute which prohibits inclusion of CWIP in companies' retail rates until 12 months prior to the completion of a project.

On July 15, 1983, KGE filed a wholesale rate request before FERC asking for approximately $4 million. Nearly $1.7 million -- or 42 percent -- of this request was attributed to CWIP costs allowed by the new FERC rule. The remainder of the request was related to polution control costs and KGE's share of a coal-fired unit at the Jeffrey Energy Center near Topeka, Kansas.

The Commission permitted that rate increase to become effective notwithstanding the fact that it violates any reasonable interpretation of the Commission's 6 percent ceiling on increases attributable to CWIP. The $1.7 million attributable to CWIP increases total wholesale revenues by 6 percent. However, some wholesale customers' rates were not increased at all, or were not increased proportionally. Consequently, the rates for all municipal wholesale customers increased by over 9 percent because of CWIP and, in particular, the rates for full requirements municipal utilities are being increased almost 12 percent. Thus, the 6 percent cap appears to be illusory and the anticompetitive effects far greater than the Commission would have you believe. KGE was among the first to file under the new FERC rule. Since the 24 municipally owned utilities are now paying for CWIP, while KGE's retail ratepayers are not, these communities have been placed in a "price squeeze." Their retail rates have gone up to reflect inclusion of CWIP, while those of KGE's retail consumers have not been increased similarly. The municipalities also have been put at a disadvantage in attracting new industries and businesses. Most of these communities are small and the loss of even one business or industry could have a very damaging effect on the community's economic health and employment situation.

Ironically, this increase will have a minimal effect on the company's financial position. According to its 1983 Annual Report, "street lighting, wholesale, and other" revenues accounted for only 12 percent of the company's sources of revenue. Moreover, the company appears to be in good financial health. Wilson Cadman, Chairman of the Board and President of KGE reported to shareholders, "(e)arnings, net income, revenues and kilowatthour sales all increased over 1982. Vigorous cost controls minimized operating expenses. Common stock dividends were increased for the 28th time in as many years." Finally, KGE said its return on average common equity was up to 15.8 percent in 1983, compared with 15.5 percent in 1982, and net income rose to $107.5 million in 1983, contrasted with net income of $84.7 million in 1982.

Many other municipally owned electric utilities face similar anticompetitive problems if the FERC CWIP rule is allowed to stand. They also may provide a financial windfall to their suppliers as well.

We feel Congress must act now to remedy this inequity and insure that competition remains among the various segments of the electric industry.

S. 1069 and H.R. 555 would go a long way towards maintaining this vital competition, hopefully eliminating the problems now being faced by our small systems purchasing from KGE and yet would retain the ability of FERC to allow CWIP on a case-by-case basis if a utility demonstrated genuine financial need.

Senator **Murkowski**. Thank you very much, Mr. Stroup.

I think the questions I had have already been basically directed. I apologize for cutting this panel a bit short. I have a commitment at noon, and it's 10 after now, with the Ambassador from Singapore.

Go ahead, you had one concluding remark?

Mr. **Solomon**. I'd just like to clarify one point that Mr. Ritz tells me he thinks is not clear that the chairman maybe doesn't understand.

That is, the chart I have prepared do show that the cost of including CWIP in the rate base is higher to consumers than including 100 percent or 50 percent of CWIP at the rate base.

I just wanted to make that point clear.

Senator **Murkowski**. I appreciate your testimony and your charts.

We will accommodate the other panelists that have been kind enough to spend a good deal of the morning in the educational process, or perhaps becoming convinced or unconvinced, at 1 o'clock or thereabouts.

The testimony then will be chaired by Senator Chafee.

I would suggest that you would probably have until 10 after 1. So with that 10 minute's grace, it may allow you to—10 after 1. Excuse me; 10 after 1, it's anticipated that the next panel will convene.

I thank you very much for your attention and the excellent record which you have assisted in establishing and I wish you a good day.

[Whereupon, at 12:10 p.m., the committee recessed.]

AFTERNOON SESSION

Senator **Chafee** [presiding]. May we have the next panel, Mr. Spang, Mr. Burke, Mr. Benore, and Mr. Huneke.

Why don't we start with Mr. Benore.

STATEMENT OF CHARLES A. BENORE, FIRST VICE PRESIDENT, PAINE, WEBBER, MITCHELL, HUTCHINS, INC.

Mr. **Benore**. My name is Charles A. Benore. I'm a first vice president and member of the board of directors of Paine, Webber, Mitchell, Hutchins, an investment research firm.

It's my understanding that the U.S. Supreme Court ruling commonly known as Hope and Bluefield, requires that a company have sufficient financial integrity so that investors have confidence in investing in the securities of that company or companies.

Capitalized interest, or AFUDC, detracts from this confidence in the financial integrity of electric power companies for these reasons.

No. 1, to investors, cash is better than an IOU.

No. 2, AFUDC reduces the cash flow of electric power companies and makes them more dependent on the capital markets.

No. 3, from an investor perspective, AFUDC detracts from the dividend quality of the primary form of return to investors; and,

No. 4, this AFUDC, or capitalized interest, also detracts from the growth potential of the utility.

This reduction in financial integrity has adverse effects, not only on investors, but on customers, and perhaps our country as well.

For some investors, you see, the risk will be too high. And as a consequence of being too high, they will not invest in securities of the electric power industry.

And unfortunately, I have to say that both in 1974 and 1975, and again in 1980 and 1981, the investor-owned electric power companies did not have sufficient financial integrity to avoid problems in attracting capital in those years.

For those investors that can tolerate higher risks, the unfortunate aspect is to increase the cost of capital and cost of supplying electricity.

Both of these, that is, the lack of capital availability and the increase of the cost of capital, are adverse to customer interests and those of our country, I believe, as well.

Other than these issues, there are several others that I believe spring from allowing a cash return on construction work in progress; and that is, that they send the right price signals to we, as customers, so that we can make more intelligent choices about the energy sources that we use, as well as to emphasize conservation. They reduce energy usage because of the higher near-term affect cost of electricity during the construction phase, which I believe has some beneficial aspect, and that is through price elasticity to reduce the demand for energy, thereby, conserving valuable finite oil and other energy sources, and reducing the harmful affects of energy consumption from an environmental aspect.

Further, there's less rate shock. And there's another thing that I think is becoming increasingly important to our country, and that is the position of nuclear power.

I'm not here to argue that it's safe or unsafe, that it's cost effective, needed, or whatever it may be. But I think that our country may in the future be denied of a very valuable or potentially valuable future energy option, nuclear power. And the denial of a cash return on construction work in progress would discourage companies from building powerplants and nuclear plants as well; and, therefore, may reduce the energy options of our country.

Senator CHAFEE. Well, let me just ask you a question in connection with that. I'm not going to take the position pro or con, nuclear power, just like you.

But in the total picture of accepting everything you say, the problems with nuclear power are far greater than this.

Mr. BENORE. Senator Chafee, I agree.

Senator CHAFEE. The contribution that CWIP would make to enhancing the construction of nuclear power facilities is minor, I think, compared to the delays incurred in the environmental attainments or achievements and the numerous delays that seem to be imposed by the nuclear regulatory agency or local licensing authorities and so forth.

Isn't that so?

Mr. BENORE. Yes, sir, Mr. Chafee, I agree. But it's sort of like a swimmer who's 10 feet under the water, and that being nuclear power you're probably at about 10 feet underwater now, and that's about as far down as you can go. But why not let it come up. Just being 9 feet underwater would mean that it would still be in trouble for all the other reasons that you and I could both volunteer, but I'm asking why close out or preclude or damage what might be a future and valuable energy option to our country.

And for these reasons, I'm against the bill, and I strongy believe that a cash return on all construction work in progress should be allowed; that FERC's compromised rule should be changed to allow full inclusion of construction work in rate base with a cash return or, at the very least, be maintained in its present status.

On balance, I believe earning a cash return on CWIP to be in the customer's and country's best long-term interest.

Senator CHAFEE. In other words, what you would say is that get a cash return on all of the construction itself, the bricks and mortar, during work in process. Is that right?

Mr. BENORE. I'm limiting my comments here specifically to the capital costs that are involved or incurred.

Senator CHAFEE. Yes. But then you went on to say what you really—if I understood you, your last sentence there, to allow full inclusion of all construction work. Isn't that what you were saying?

Mr. BENORE. I thank you for pointing that out to me. I mean to say a cash return, the return portion of the cost of a plant, at this point the entirety of it, in my view, should be allowed to be in the form of cash instead of an IOU from the customers over the next 30 or 40 years.

I'm not speaking to the bricks and mortar or labor or other costs involved in a plant. I'm speaking of the return portion of——

Senator CHAFEE. Why not? I mean, why not include everything?

Mr. BENORE. I think you wouldn't want to include everything because that would be going overboard. It would——

Senator CHAFEE. Wouldn't that achieve everything that you're seeking, that is, so you wouldn't have this—what do you call it, rate jump—what's the word?

Mr. BENORE. Rate shock, or rate increases.

Senator CHAFEE. Rate shock. I mean I'm not being facetious, but if you've got a plant that is going to take $100 million of investment and 5 years to build, why not take not just the cost of your capital for that construction, but take everything, the cost for everything that might be involved?

Mr. BENORE. I think the answer to that is, indeed, it may possibly be necessary, but I don't think that it is. I think what is necessary is to enable companies, electric power companies the opportunity to achieve a satisfactory level of financial integrity. And so that there not be inequities, that that level of financial integrity be no higher than necessary to protect the consumers' interest, but, on the other hand, be no lower than it should be, to protect the investors' interest as well.

I think that we can achieve a satisfactory level of financial integrity by not going beyond full inclusion of CWIP in terms of a cash return to the investor for the use of her or his funds.

Senator CHAFEE. OK. Fine. Thank you.

[The prepared statement of Mr. Benore follows:]

TESTIMONY ON CONSTRUCTION WORK IN PROGRESS

by

Charles A. Benore
First Vice President

Paine Webber Mitchell Hutchins Inc.

on

April 12, 1984

before

UNITED STATES SENATE

Committee on Energy and Natural Resources
Washington, D. C. - 20510

Q. What is your name and business affiliation?

A. My name is Charles A. Benore. I am a First Vice President and member of the Board of Directors of Paine Webber Mitchell Hutchins. Paine Webber Mitchell Hutchins, where I am the utility investment analyst, provides research services to most U. S. institutional investors and to retail investors through Paine Webber Jackson & Curtis.

Q. Why do you recommend that electric companies earn a cash return on construction in progress (CWIP)?

A. It is my understanding that the U. S. Supreme Court ruling, commonly referred to as Hope and Bluefield, requires that a company have sufficient financial integrity so that investors have confidence in the investment merits of the company, and in turn, capital can be raised at reasonable costs.

Q. Do investors believe that an AFUDC, or an allowance for funds used during construction, detracts from a company's financial integrity?

A. Yes. There are four reasons why investors are concerned with low-quality earnings of electric utilities due to the AFUDC content:

1. Cash is better than an IOU. AFUDC is an explicit promise from regulators for future rate increases in place of rate relief today. With AFUDC, as with any promissory note, a utility always faces some risk of nonrecovery, and in this case from future regulators and customers. Perhaps more

important, however, a rate increase received today due to inclusion of CWIP in rate base eliminates the need for a similar or larger rate increase tomorrow due to AFUDC. Since there are practical limitations on the size of rate increases that can be granted all at once, AFUDC can restrict the flexibility of regulators in handling other rate requests a company may make in the future.

2. Increased Capital Market Dependence. Low-quality, or AFUDC, earnings provide less cash flow to a utility for accomplishing necessary investment. As a result, a utility is more reliant on the capital market and has less flexibility in going to market with new issues. Under these circumstances, there is a greater probability that a company will be forced to sell new stock during adverse market conditions, and, consequently, investors face a greater risk of equity dilution due to sales of common stock below book value.

3. Reduced Dividend Security. Dividends must be paid in cash. If earnings are largely comprised of AFUDC, borrowed funds must be used to pay dividends. This has obvious implications for the security of the dividend. In our regression analyses of utility shares, we have found that the level of cash earnings coverage for the dividend is highly correlated with utility share prices relative to book value. This is not surprising since the safety of the income stream is of paramount importance for any income security. It suggests that trends in earnings quality and hence dividend security are an important concern for investors.

4. Reduced Dividend Growth. Borrowing to pay the dividend also has

implications for the rate of dividend growth. Utility managements may defer or significantly moderate dividend increases that would require additional borrowing. Moreover, AFUDC reduces pretax interest coverages and contributes to lower bond ratings on debt. Therefore, debt costs will increase and reduce profits to stockholders and dividend growth. (Although debt costs are recognized by regulation in setting rates, electric companies generally earn a lower return than regulators allow, and the gap widens when cost increases accelerate.)

Q. What is the practical effect of investor attitudes on the availability and cost of electricity to customers?

A. The reduction in financial integrity from a noncash, or AFUDC, return on CWIP increases risk to investors. For some investors, risk will be too high, and as a result, the pool of capital available to electric companies will be reduced. Unfortunately in 1974 - 1975, and again in 1980 - 1981, electric utilities encountered capital attraction problems (the pool of capital was too small). This is clearly wrong and adverse to customer and national interests. Electricity is too indispensable to employment, living standards, and growth to allow such a condition to occur twice in such a short span of time.

Investors who can tolerate the additional risk, require a higher return to compensate for the higher risk. The effect of a higher cost of capital is to increase the cost of electric power service to customers which is also an undesirable outcome.

Q. What do you believe the primary elements of financial integrity to be, and can they be met without a cash return on CWIP?

A. Financial integrity is a condition where a company has sufficient financial strength to raise needed capital in good and bad markets at reasonable costs, and with rates to customers and rates of return to stockholders that are fair.

More specifically, financial integrity is the condition where an electric power company:

1. Generates cash flow to construction of at least 50%;

2. Achieves a double A bond rating;

3. Sells new common stock so that net proceeds are at least equal to, or above book value;

4. Possesses adequate financial strength and financial flexibility, or a common equity ratio of at least 40%, and short-term debt of less than 3% of capitalization.

5. Earns a fair return on common stock equity of good quality, or a return of at least 16% with an effective tax rate comparable to competing industrial companies, or virtually a full 46% rate.

6. Has no more, or less, than a satisfactory level of financial integrity so that rates and returns are fair to customers and investors.

In each of these measures, the electric power industry has, over the last five and ten-year periods, not achieved a satisfactory level of financial integrity. This was also true in 1982, which is the last year that such information is available. In 1982:

1. Cash flow to construction for the industry was 31%,

2. The bond rating for the industry was single A to triple B generally,

3. The price-to-book-value ratio was below 1.0 times,

4. The common equity ratio was 39%,

5. The earned return was 13.6% (14.2% estimated for 1983), and the effective tax rate was 34%. AFUDC to net income for common stock was 54%.

6. There was not equity for investors, and electric companies generally did not possess a satisfactory level of financial integrity.

Financial integrity cannot be achieved to the extent of nonregulated, or industrial companies (against which electric companies compete for capital) without a cash return on all CWIP.

Q. Can you statistically verify that investors react negatively to AFUDC?

A. Yes. Exhibit 1 shows a portion of a report by me that demonstrates this to be statistically true. On page four under narrow measures of risk, risk variable number 21, or AFUDC to net income for common stock, is negatively related to the price-to-book-value ratio, or the price an investor will pay for the earnings base of a company. Investor sensitivity to AFUDC is also evident in variable 20, or cash earnings coverage of the common stock dividend.

Q. Other than the issues of capital availability and capital cost, do you have other comments on earning a cash return on CWIP?

A. Yes. Allowing a cash return on construction work in progress also has the desirable benefits of:

1. Sending the right price signals, or a price closer to the marginal cost of power, to consumers so that they can make more intelligent choices of alternate sources of energy including conservation.

2. Reducing energy usage because of price elasticity effects through more efficient energy use, thereby serving the national interest of reducing dependence on foreign energy sources, conserving finite oil and energy natural resources, and reducing the harmful environmental consequences of an enlarged consumption of energy.

3. Lessen rate shock when a plant goes into service.

4. Help to preserve the nation's energy options. Although nuclear power is a

controversial source of energy supply because of safety and cost considerations, it could prove to be indispensable to the national well being in the event of adverse foreign oil developments or environmental consequences of burning coal. Denial of a cash return on CWIP would further discourage companies from building nuclear power plants and possibly reduce the nation's future energy options.

There are also some negative and possibly negative consequences. Among these are:

1. Rates will be higher to customers in the short-run. Of course, they will also be lower in the long-run.

2. Lower risk to the company and its investors associated with a cash return on CWIP, it is sometimes argued, provides an incentive for management to build power plants that are unnecessary, or less economical than they otherwise might be. However, state utility commissions are required to shield consumers from imprudent management decisions.

3. There are possible intergenerational problems. For example, a customer may move from one company's service area to another and not benefit from paying a cash return on the plant where she/he used to live. However, this is less likely for rates under the Federal Energy Regulatory Commission jurisdiction which covers most companies. Another possible inequity is for elderly people who pay a cash return on CWIP, but are unable to use the service when the plant goes into service. Special

provisions may be required to provide equity to the elderly.

Q. What is your recommendation to the Subcommittee?

A. I recommend that a cash return on CWIP be allowed, and that FERC's compromised rule be changed to allow full inclusion of CWIP in rate base with a cash return, or at the very least be maintained in its present status. On balance, I believe earning a cash return on CWIP to be in the customer's and country's best long-term interests.

Exhibit I
Page 1 of 2

Table 2 Continued

Correlation of Various Measures of Risk With the Price-to-Book-Value Ratio of Forty Electric Power Company Common Stocks (1)

Interest Rate:
Common Adjustments to Different Companies Except That Companies With Larger Construction Programs Would Incur More Risk. Please See Risk Variables 24 and 25 under "Narrow Measures of Risk"

Purchasing Power Risk:
Common Adjustment to Different Companies

Footnotes:

(1) All data for explanatory variables is latest available as of 5/10/82.

(2) Based on average, simple correlation coefficient and student t ratio for the following days: 3/10/82, 4/12/82, 5/10/82, 6/10/82, and 7/12/82.

(3) Coded so that the highest safety, financial strength, financial integrity and bond rating had the lowest value.

(4) 1981 depreciation plus deferred taxes including deferred investment tax credits plus net income for common stock minus all AFUDC to common stock dividends.

(5) 1981 net income for common stock minus all AFUDC to common stock dividends.

(6) In the short-run, large construction programs are adverse to investors because of the risk of less than adequate and timely rate relief associated with an expanding new investment, and the harmful effects of selling common stock below book value. In the long-run, sales, peak load and rate base growth are prerequisites to long-term real earnings and dividends per-share growth.

(7) It is possible that larger electric companies are often those that serve large metropolitan areas. Such companies, or "big city utilities," are often discounted in value by investors because of perceived slow sales growth and possible political problems in obtaining adequate and timely rate relief.

Exhibit I
Page 2 of 2

Table 2

Correlation of Various Measures of Risk With the Price-to-Book Value Ratio of Forty Electric Power Company Common Stocks (1)

	Risk Variable Number	Expected Sign	Simple Correlation Coefficient (2)	Student "t" Ratio (2)
Broad Measures of Risk				
Betas:				
Beta 1	1	-	-0.142	-0.89
Beta 2	2	-	0.186	1.17
Beta 3	3	-	0.098	0.61
Value Line	4	-	Mixed Signs	Mixed Signs
Standard Deviation of Return on Common Stock Equity	5	-	Mixed Signs	Mixed Signs
Coefficient of Variation	6	-	-0.217	-1.37
Standard Deviation of Total Return to Common Stock Investors	7	-	-0.173	-1.09
Coefficient of Variation	8	-	-0.351	-2.32
Value Line Safety Rating (3)	9	-	-0.229	-1.46
Value Line Financial Strength Rating (3)	10	-	-0.506	-3.64
PWMH Financial Integrity Rating (3)	11	-	-0.625	-4.94
Bond Rating (Moody's and Standard & Poor's) (3)	12	-	-0.531	-3.88
Narrow Measures of Risk				
Business:				
Fuel - Coal	13	+	0.190	1.20
Oil	14	-	-0.168	-1.05
Natural Gas	15	+	0.143	0.89
Nuclear	16	-	-0.278	-1.79
Hydro	17	+	Mixed Signs	Mixed Signs
Coal Plus Gas Less Nuclear Plus Oil	18	+	0.312	2.02
Cash Flow Coverage of Common Stock Dividend (4)	19	+	0.225	1.42
Cash Earnings Coverage of Common Stock Dividend (5)	20	+	0.466	3.25
AFUDC to Net Income for Common Stock, 1981	21	-	-0.436	-2.99
Nuclear CWIP at Year-end 1981 to 1981 Gross Plant	22	-	-0.070	-0.44
Projected Kwh Sales Growth Rate, 1981-1984 (6)	23	+	0.424	2.89
Construction, 1982-1984, to 1981 Gross Plant (6)	24	-	0.087	0.54
Growth Rate of 1981-1984 External Additions to Common Stock Equity (6)	25	-	-0.242	-1.54
Financial:				
Common Equity Ratio, 1981	26	+	Mixed Signs	Mixed Signs
Marketability:				
Capitalization, 1981 (7)	27	+	-0.453	-3.14
Market:				
Please see Betas Under Broad Measures of Risk				

Senator CHAFEE. Just in curiosity, what's the difference between your firm and the brokerage house Paine, Webber, Jackson so forth?

Mr. BENORE. We're a family of companies. Paine, Webber is the holding company. It's principal subsidiary is Paine, Webber, Jackson & Curtis that works with retail investors. We have another subsidiary—and several others, but one of the others is Paine, Webber, Mitchell, Hutchins that provides investment research to institutional investors and to retain investors as well through Paine, Webber, Jackson & Curtis.

Senator CHAFEE. I see. Fine. Thank you.

Mr. BURKE.

STATEMENT OF ROBERT W. BURKE, SENIOR VICE PRESIDENT, DIRECTOR—ENERGY DEPARTMENT, MOODY'S INVESTORS SERVICE

Mr. BURKE. I have a very abbreviated presentation of my testimony.

Senator CHAFEE. No one will complain about that.

Mr. BURKE. The purpose of the following testimony is to express in general terms the range of opinions pertaining to the inclusion of construction work in progress in the rate bases of electric utility companies and, more specifically to state Moody's position on these matters as a bond-rating agency, especially as related to pending legislation.

Topic: The Used and Useful Test. Opponents of CWIP say that such property is not used and useful for today's customers and, therefore, should be financed at investor risk and paid for by future generations of users. This is referred to as the intergenerational equity problem, which would have today's customers not contributing to the cost of utility service which they may not use at all.

Topic 2: Proponents of CWIP say that public utilities are responsible for both present and future demands of their franchised area, and simple practicality precludes the arbitrary establishment of generational responsibility. In order to satisfy the legal and public responsibility, the utility company extends to the future as well as present customers because of the practical requirements of property additions and the continuous nature of public responsibility.

Topic 2: CWIP And Utility Management Incentive. Opponents of CWIP may question management incentive to control capital cost if they earn cash returns on the continuing capital expenditures. Proponents of CWIP would state that the practical necessity of cash flow and call to mind the constant review and correction tools of regulatory agencies.

Topic 3: Construction Risk. Opponents of CWIP argue that the ratepayer bears too much of the cost of new plants and too much of the risk of cost increases and expensive delays. Proponents, on the other hand, of CWIP hold that without higher earnings and existing plant in service, the lack of an equitable sharing of new plant costs precludes the regulated utility from generating sufficient cash flow to sustain its financial integrity and market access during periods of heavy construction.

As an independent rating agency, Moody's function is to convey its opinion of the absolute and relative quality of fixed-income securities to the investment community.

Ratings properly assigned, and properly recognized by the investor contribute to overall market efficiency.

In the evaluation of utility credit risk, rate base treatment of CWIP is an important consideration. We see no solution to the so-called intergenerational equity problem other than to consider it impractical in today's world.

So far as possible, management actions or inactions related to CWIP are subject to close scrutiny by regulators, investors, and rating agencies alike.

And we see no alternative for the highly capital-intensive utility but to call upon the ratepayer for a portion of its cash-flow needs.

I wish to devote the balance of this testimony to the perspectives of a rater of fixed-income securities as they pertain to the financial condition of electric utilities.

CWIP and the proposed legislation are important enough issues for us to be here today.

Large capacity additions to electric utility plants have created a ratemaking problem. Utility companies generally have not been allowed to adequately raise rates to compensate for the cost of new plants during construction.

As a result, their customers face sudden and significant rate adjustments when the plants are completed and fully included in rate base.

The fundamentals of public utility regulation as developed over the years are basically sound; however, there are practical limitations in their implementation which stem from today's large-capacity additions for which there were not adequate financial provisions.

These limitations relate to the immediate rate impact on the consumer. I'm concerned that sound regulatory fundamentals will be pointedly violated by patchwork regulation which handles the parts, but tends to neglect the whole of the enterprise.

It is critical that regulators focus on the continuing overall health of the utility company when they make their rate decisions.

Erratic financial results are counterproductive to the utility's capital raising functions, and they certainly are not condusive to high ratings.

The rater of security feels most comfortable in an environment that offers a reasonable degree of consistency and predictability of quality earnings and prudent financial management.

Irregular external forces which may emerge in regulatory philosophy and methodology can make the rater uncomfortable.

For example, the various phase-in plans which are cropping up with vague promises of a better tomorrow introduce an added element of regulatory risk to the investor.

Another example could be legislation on CWIP, as currently proposed.

In the end, denial or postponement of earnings production from one segment of a company's asset base must be offset by higher earnings on the balance of the asset base if adequate overall returns are to be realized with reasonable consistency.

Therefore, I find myself a regulatory conservative more comfortable with the wisdom of a Bluefield than with the patchwork regulation.

But one must recognize certain realities. Where large capacity additions are made and there is insufficient CWIP in the rate base, an unacceptable initial rate impact under traditional regulatory methods can occur. This is where the conservative in me meets the pragmatist.

Among the dictates and opinions of the *Hope Natural Gas* case in 1944 can be found in the following one brief sentence: * * * under the statutory standard of just and reasonable, it is the result reached and not the method employed which is controlling. It is not the theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the act—that's the Natural Gas Act of 1938—is at an end.

I do not oppose the end result concept as long as the methods employed on the case-by-case basis do not create conditions which could ultimately make it difficult or impossible for the regulators to consistently meet the sufficient dictates of the *Bluefield* and *Hope* cases.

Such methods may range from effective exclusion of utility property from rate base to inordinant regulatory delay which, at any given time, could produce the same result of inadequate returns.

Thus, it is difficult for a rater to view favorably a regulatory environment which produced just and reasonable returns sporatically, while leaving the utility company in a tenuous financial condition in the interval.

Evaluating regulatory environment is difficult, at best, when applying it to the longer term perspective of debt and preferred stock ratings.

For the most part, regulatory bodies are politically sensitive and subject to frequent changes in personnel and philosophy.

Their good intentions are not binding. There is, therefore, no alternative but to recognize the reality of delayed returns on some utility investment, but the rater must be wary of the potentially negative characteristics of this delay.

In my opinion, an active solution to the problem of ratemaking for large capacity additions is the use of CWIP, and a special focus by regulators on keeping the utility financially strong during its heavy construction periods.

Finally, the concept as proposed in H.R. 555, which would allow use of CWIP in rate base only under a condition called severe financial difficulty is, in my opinion, counterproductive to the capital formation needs of the utilities.

A company experiencing severe financial difficulties is likely to already have been precluded from market access, or forced to pay an inordinate price for its capital.

Interaction between a prudently managed utility and responsible regulators should have prevented this from happening in the first place.

The current reality is that some electric utilities have completed large projects and are beginning to work their way out of financial difficulties.

The ones continuing to strain under serious financial burdens are those which are endeavoring to complete large plant additions to satisfy future service requirements.

It is these financially beleagued utilities which would bear the brunt of the proposed restrictive legislation.

Thank you.

[The prepared statement of Mr. Burke follows:]

UNITED STATES SENATE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

SUBCOMMITTEE ON ENERGY REGULATION

Statement of

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on behalf of

MOODY'S INVESTORS SERVICE

April 12, 1984

The purposes of the following testimony is to express in general terms the range of opinions pertaining to the inclusion of construction work in progress (CWIP) in the rate bases of electric utility companies and, more specifically, to state Moody's position on these matters as a bond rating agency, especially as related to pending legislation.

A. The "Used and Useful" Test

1. Opponents of CWIP say that such property is not used and useful for today's customers and, therefore, should be financed at investor risk and paid for by a future generation of user. This is referred to as the "intergenerational" equity problem, which would have today's customers not contributing to the cost of utility service which they may not use at all.

2. Proponents of CWIP say that public utilities are responsible for both present and future demands in their franchised area, and simple practicality precludes the arbitrary establishment of generational responsibility. Furthermore, they demonstate that when CWIP is excluded from current rate base and financing costs are deferred and paid over the service life of the plant, the ultimate cost of that facility is higher. In order to satisfy the interests of a smaller number of people likely to leave prior to completion of a given facility, a larger number of remaining customers will be left to bear higher rates. The result would be intergenerational

inequity. The legal and public duty of the utility company extends to future as well as present customers because of the practical requirements of property additions and the continuous nature of public responsibility.

B. CWIP and Utility Management Incentive

1. Opponents of CWIP may question management incentive to control capital cost if they earn cash returns on continuing capital expenditures.

2. Proponents of CWIP would restate the practical necessity of cash flow and call to mind the constant review and correction tools of regulatory agencies.

C. Construction Risk

1. Opponents of CWIP argue that the ratepayer bears too much of the costs of the new plants and too much of the risk of cost increases and expensive delays.

2. Proponents of CWIP hold that without higher returns on existing plant in service, the lack of an equitable sharing of new plant cost precludes the regulated utility from generating sufficient cash flow to sustain its financial integrity and market access during periods of heavy construction. Risks born by utility

> security holders are evident today in the loss of market value of the bonds and stocks of certain builders of nuclear plants. Without CWIP, these risks could be intensified to a point that undermines the utility's access to public markets.

As an independent rating agency, Moody's function is to convey its opinion of the absolute and relative quality of fixed-income securities to the investment community. These opinions take the form of letter symbols. Aaa is prime grade; Aa is high grade; A is medium grade; Baa is lower medium grade; Ba indicates elements of speculativeness; and B indicates that issues are one gradation above securities which are in or appear likely to be in default. Ratings, properly assigned and appropriately recognized by the investor contribute to overall market efficiency.

In the evaluation of utility credit risk, rate base treatment of CWIP is an important consideration. We see no solution to the so-called intergenerational equity problem other than to consider it impractical in today's world. So far as possible, management actions or inactions related to CWIP are subject to close scrutiny by regulators, investors, and rating agencies alike. And we see no alternative for the highly capital-intensive utility but to call upon the ratepayer for a portion of its cash flow needs.

I wish to devote the balance of this testimony to the perspectives of a rater of fixed-income securities as they pertain to the financial condition of electric utilities. CWIP and proposed legislation are important enough issues for us to be here today.

Large capacity additions to electric utility plant have created a ratemaking problem. Utility companies generally have not been allowed to adequately raise rates to compensate for the cost of new plants during construction. As a result, their customers face sudden and significant rate adjustments when the plants are completed and fully included in rate base.

Some believe that the best solution to this sudden increase is a method of "phase-in," which may be defined as a gradual attainment of returns following completion of a high-cost asset. I will address this solution as a rater of fixed-income securities who finds himself a conservative pragmatist on the subject.

The fundamentals of public utility regulation as developed over the years are basically sound. However, there are practical limitations in their implementation which stem from today's large capacity additions, for which there were not adequate financial provisions. These limitations relate to the immediate rate impact on the consumer. I am concerned that sound regulatory fundamentals will be pointedly violated by "patchwork regulation," which handles the parts but tends to neglect the whole of the enterprise. It is critical that regulators focus on the continuing overall health of the utility company when they make their rate decisions. Erratic financial results are counterproductive in the utility's capital-raising function, and they certainly are not conducive to high ratings.

At the risk of restating the obvious, electric utilities are highly capital-intensive companies that require access to the capital markets at all times and at the most reasonable cost possible. Money is their engine, and financial health lends efficiency to their operation. During the past decade, the financial health of electric utilities has generally declined to a point where ratings now have a center of gravity in the mid-to-lower ranges of Moody's A rating category. The industry has lost a number of Aaa-Aa issuers and gained some in the Baa classification.

The rater of securities feels most comfortable in an environment that offers a reasonable degree of consistency and predictability of quality earnings and prudent financial management. Irregular external forces, which may emerge in regulatory philosophy and methodology, can make the rater uncomfortable. For example, the various phase-in plans, which are cropping up with vague promises for a better tomorrow, introduce an added element of regulatory risk to the investor. Another example, would be legislation on CWIP as currently proposed.

Deviation from sound regulatory principles to satisfy temporary needs is a serious concern. Allow me, as a regulatory conservative, to quote a sentence from the Supreme Court's ruling in the Bluefield case (Bluefield Waterworks & Improvement Co., vs. Public Service Commission, 262 U.S. 679, 692-695 (1923)) which treats the interests of the investor as well as those of the consumer.

> ...The return should be reasonably sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.

If the dictate of the Supreme Court was controlling today's regulatory environment, it would seem to me -- as a rater and not as a lawyer -- that there is ample room for regulatory flexibility in the court's words to allow commissions to satisfy their responsibilities without stranding investments. By "stranded investments" I mean investments that by one means or another are specifically deprived of adequate earnings production. Exclusion of CWIP from rate base would seem to fall into this classification. Stranded investments certainly do not satisfy the consistency and predictability standards relating to this rater's comfort level. I might add that use of allowance for funds used during construction (AFUDC), an essentially noncash producing accounting credit, offers little if any help. Investment analysts and informed investors focus on AFUDC to determine the degree to which utilities lack earnings quality. A high level of AFUDC translates into a low level of earnings quality.

In the end, denial or postponement of earning production from one segment of a company's assets base must be offset by higher earnings on the balance of the asset base if adequate overall returns are to be realized with reasonable consistency. Therefore, I find myself a regulatory conservative more comfortable with the wisdom of Bluefield than with patchwork regulation.

But one must recognize certain realities. Where large capacity additions are made and there is insufficient CWIP in the rate base, an unacceptable initial rate impact under traditional regulatory methods can occur. This is where the conservative meets the pragmatist.

Among the dictates and opinions of the Hope Case (Federal Power Commission vs. Hope Natual Gas Company, 320 U.S. 591,603 (1944)) can be found the following:

> ...under the statutory standard of "just and reasonable" it is the result reached and not the method employed which is controlling....it is not the theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the Act (Natural Gas Act of 1938) is at an end.

I do not oppose the "end result" concept, as long as the methods employed on a case-to-case basis do not create conditions which could ultimately make it difficult or impossible for the regulators to consistently meet the "sufficient return" dictate of the Bluefield and Hope cases. Such methods may range from effective exclusion of utility property from rate base to inordinate regulatory delay, which at any given time could produce the same result of inadequate returns. Thus, it is difficult for a rater to view favorably a regulatory environment which produced "just and reasonable" returns sporatically, while leaving the utility company in a tenuous financial condition in the interval.

Evaluating regulatory environment is difficult, at best, when applying it to the longer-term perspective of debt and preferred stock ratings. For the most part, regulatory bodies are politically sensitive and subject to frequent changes in personnel and philosophy. And their good intentions are not binding. There is, therefore, no alternative but to recognize the realty of "delayed returns" on some utility investment, but the rater must be wary of the potentially negative characteristics of this delay.

The basic ingredients for a balancing of consumer and investor interests are accurate planning of assets required to provide reliable service, efficient and economical management, and adequate cash flow. Cash flow is, in part, a responsibility of regulation. Let's put aside for the moment the numerous devices employed for establishing rate base and rate of return. Highly capital-intensive public utility companies rely on their securities being well regarded to attract capital at reasonable rates and at all times. This regard relates directly to their ability to provide reliable service. To inspire investor confidence and maintain its financing flexibility, the utility company must consistently produce sufficient cash flow to hold fixed-income financing at levels which will not materially impair earnings and asset protection for those securities. And earnings levels should produce returns that will attract equity investment at values which make maintenance of a strong capital structure easier.

In my opinion, an active solution to the problem of rate-making for large capacity additions is the more extensive use of CWIP and a special focus by regulators on keeping the utility financially strong during its heavy construction periods.

Federal legislation as applied to federal jurisdiction is important, and its influence on state regulation is even more important. Legislative proposals to reverse the Federal Energy Regulatory Commissions' Order 298, which allows utilities to include 50% of most types of CWIP in FERC jurisdictional rate bases is a step in the wrong direction. Proposed "need levels," such as cash flow at 40% of test-year construction requirements would likely be rendered ineffective by labored qualification standards. The later would make rate increase requests subject to inevitable "regulatory lag," a major contributor to serious public utility financial problems.

Additionally, the concept as proposed in H.R. 555 which would allow use of CWIP in rate base only under a condition called "severe financial difficulty" is, in my opinion, counterproductive to the capital formation needs of the utilities. A company experiencing severe financial difficulties is likely to already have been precluded from market access or forced to pay an inordinate price for its capital. Interaction between a prudently managed utility and responsible regulators should have prevented this from happening in the first place.

The current reality is that some electric utilities have completed large projects and are beginning to work their way out of financial difficulties. The ones continuing to strain under serious financial burden are those which are endeavoring to complete large plant additions to satisfy future service requirements. It is these financially beleagued utilities which would bear the brunt of the proposed restrictive legislation.

Senator **Chafee**. Thank you very much, Mr. Burke.

As you pointed out, you're here because these things can affect your rate rating ability.

Mr. **Burke**. Yes, sir, they can.

Senator **Chafee**. Thank you.

Mr. Spang.

STATEMENT OF JAMES R. SPANG, PRESIDENT, AMERICAN SOCIETY OF UTILITY INVESTORS

Mr. **Spang**. Thank you very much, Mr. Chairman.

Let me say first off that I'm delighted to be here. This is the first that I've ever testified before the U.S. Senate, and, very frankly, it's a little bit overwhelming, and I'm a little bit frightened.

Senator **Chafee**. Well, don't be either, because, as you can see, you're not playing to a full house here this afternoon.

Mr. **Spang**. That's very helpful. I feel a little bit like Patrick Green. Old Pat, he was the town drunk. In any event, one day the boys took him out to the local tavern and so forth and they got him pretty well laced, pretty well oiled. And they were taking him back home and they passed a mortuary—that's a funeral home, and in any event, they saw on the inside there there were a number of coffins and so forth, and right in the center there was one coffin there that had a body in it. So they thought they would play a good joke on Pat. They took him in there and they took that body out and they kind of stood it in the corner and so forth and they put Pat in there.

Well, the next morning Pat wakes up and so forth, and he kind of feels around and so forth. He looks up and he sees the lid of the coffin. He raised himself up just a little bit and he sees all these other coffins in this room. And he says, my lord, he says, if I'm alive, what in the world am I doing here? And if I'm dead, how come I have to go to the bathroom so badly. [Laughter.]

I feel a little bit like Pat Green, sitting here today.

I'm here to represent the shareholders, at least, of the American Society of Utility Investors. We have about 5,000 shareholders and, of course, there's a number of associations throughout the country. In total they represent approximately 100,000 of utility shareholders.

Now, what is CWIP? CWIP is simply the inclusion in rate base of invested money on a timely basis. It's the interest that we're addressing here and not the principle.

CWIP is necesary, we believe, today for a number of reasons. Chief among them, of course, would be inflation, environmental legislation, regulation, health and safety considerations and now—and very importantly so—the new concept of participatory democracy.

I'd like to point out that really, AFUDC is certainly not the normal way of doing business in America. It's been the normal way for doing business in terms of electric utilities. Primarily because everyone seemed to agree that it was a good idea. No one minds actually capitalizing your investment provided that you're assured that you're going to get a return on your money at some time. And that requires faith. That requires faith in the Government; requires faith in the regulatory agencies; it requires faith in the company; it requires faith, I guess, in the shareholders.

In short, the company was not unhappy with CWIP, the shareholders were not unhappy, the PUC was not unhappy, FERC, certainly, was not unhappy, because all benefited.

The PUC benefited, for example, in such a way that they did not have to pass along additional charges. Not only that, the kind of plants that were coming into place, you know, during the 1950's and the 1960's were so cost- effective, so efficient that they actually many times resulted in a rate decrease. So, therefore, by capitalizing, by capitalizing your investment, by capitalizing this money, you would not actually have to give a large jump, if any. You might even have a decrease at the time that the plant comes into being.

This is no longer, of course, true. The horrendous inflation that we have experienced through the 1970's and all thes other considerations, the environmental, the health, the safety, the participatory democracy, have all had a very telling effect as far as people who invest as shareholders. And that's really what it's all about.

You've got to entice. You have got to entice shareholders or investors to put their money up so that we can have these facilities.

Now, if we don't do it one way, we have to do it another. And that means that the cost of money may escalate accordingly.

The key, therefore, is, is there enough incentive to shareholders to attract their capital? The majority of States already allow some form of CWIP for certain socially and environmental benefits.

And without CWIP, let me say, there just isn't going to be any new plants. And if there are, they will not be economical. Purchased power and oil generation will be the order of the day. For some good reasons.

Purchased power, of course, that's fairly inexpensive. You know where it is and so on, you can usually make some very good bargains in relation to purchased power, especially over the border into Canada, for example, you could do quite well. But then you would become a captive of another country.

In a sense, too, if that other country at any time in the future should need to have that power, they're going to take it. We're going to be the second on the string.

So, therefore, it might be to our benefit to be able to generate that power domestically.

Even with CWIP, there will be a significant reluctance to build new plants, but it will go a long way to show good faith. Good faith in the sense that the Government is saying—or the public utility commissions and so forth is saying yes, we do believe that it is to the interest of the rate- payers, we believe it's to the interest of everyone concerned, including—including, of course, the shareholders.

Senator **Chafee**. Now, Mr. Spang, you've got to wind up soon here.

Mr. **Spang**. Yes.

Increasingly, we seem to be moving toward a greater degree of participatory democracy. The public will have a greater stake in up-front building a plant because they will have an immediate financial stake in the facility.

So as shareholders, we're disappointed that CWIP is being restricted to 50 percent. And I certainly hope that this committee will go far towards even pushing toward 100 percent.

Thank you very much.

[The prepared statement of Mr. Spang follows:]

CWIP
TESTIMONY
OF THE
AMERICAN SOCIETY OF UTILITY INVESTORS
BEFORE THE
UNITED STATES SENATE
SUBCOMMITTEE ON ENERGY REGULATION
OF THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES

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April 12, 1984

CONSTRUCTION WORK IN PROGRESS

H.R. 555, S. 817 and S. 1069 would eliminate Construction Work in Progress (CWIP) from any Federal Energy Regulatory Commission (FERC) rate base considerations except under certain specified conditions. The American Society of Utility Investors believes that this action is unwarranted and counterproductive.

Ample testimony is already before this Committee that demonstrates the fairness of including CWIP in rate base to the ratepayers. If any more is needed, I would simply call your attention to the Appendix which was prepared by the Pennsylvania Electric Association at the time when FERC was first considering including a portion of Construction Work in Progress in rate base.

Since that time, FERC has acted favorably on the petition of the industry and has announced its intention of including CWIP in rate base at 50 percent. An alarmed Congress, believing that it had to protect the ratepayers from a voracious industry and a culpable FERC, immediately devised legislation to prevent FERC from instituting this ill advised regulatory policy.

Unfortunately, the critics often have very little understanding of how industry is financed in general and utilities in particular. One of the major dissimilutudes between the two is that utilities are a regulated industry which simply means that the natural laws of the market place are deliberately distorted in favor of some preconceived notions of fairness. Much has been made of the notion that utilities are natural monopolies. And since these public utilities do not fit the model of most other businesses that are "naturally" regulated by the laws of supply and demand and disciplined by competition, they must be carefully controlled by a third party (preferably a governmental agency) to insure equity for all parties.

So be it. I am not here to argue the merits of regulation vs deregulation; but, rather to examine CWIP and the electric utility industry from the unique perspective of the shareholders.

First, let's look at the profile of a typical utility shareholder. A number of things stand out. For one thing, utility shareholders like all other shareholders, have an understandable interest in investing their capital in profitable enterprises. Secondly, investors generally invest in industries that are likely to create a better life for their fellowman. Thirdly, utility investors are not speculators. They tend to invest in utilities as (1) a public service commitment, (2) a hedge against inflation and (3) a supplement to a modest retirement income. Above all, they value safety, constancy and fairness. Historically, government intervention and regulation has been viewed as a positive aspect by these investors and has attracted investment equity capital at little more than bank deposit rates. But, let me emphasize that it is the legal guarantees and the implied fairness of the state that has made this possible. Meanwhile, the ratepayers have enjoyed a system whose quality and reliability are unmatched in any other part of the world.

Until 1970, the making of rates and the otherwise regulation of electric utilities was relatively simple. For the most part, the regulators were concerned that the electric utilities might be reducing their rates faster than was warranted by economies of scale and technology improvements - perhaps to the detriment of competing consumer services and their own shareholders. The inclusion or exclusion of CWIP was more of an academic curiosity than a real problem. Everyone recognized that exclusion of CWIP from rates was unusual. It was generally accepted because it was also a time of triple A bond ratings, abundant cash flow and economies of scale. Regulators also profited. It often gave them an opportunity to curry favor from the legislatures by deferring forever the necessity of a rate adjustment because the new plant size and efficiency would often absorb the increased cost. It was not until the late 60s and early 70s that tightness of cash flow began to be experienced by the electric utilities largely resulting from growing inflation, environmental legislation and safety considerations. Utilities had no choice but to request rate relief. These requests, coupled with environmental, safety and new notions about the nature of democracy led to rate resistance and other forms of consumer activism which, in turn, led to further rate relief requests, abandoned plants and scared investors.

No wonder electric utilities want to bury the substitute for CWIP: Allowance for Funds Used During Construction (AFUDC). The exclusion of CWIP is and always has been a "ponzi" scheme of borrowing money to pay a return on borrowing money. It should never have been condoned in the first place.

Shareholders are increasingly being alienated from the government and the governmental agencies that are legally charged with insuring that a public utility has an opportunity to make a "fair return" on equity capital. That figure, i.e. a "fair return," is set by the Commission. Utilities, because of their monopoly positions, are forbidden to exceed it. There is simply no room for so-called windfall profits that occasionally occur in some other industries. All to often, however, the utility fails to achieve the permitted level of profit for a number of reasons including management incompetence, regulatory (rate relief) lag, inflation, and now increasingly the multiplicity of changing construction requirements. Taken together, these reasons have extended construction time to eight, ten and even twelve years at horrendous cost to the ratepayer and, more recently, the shareholder.

Still, the shareholders continue to believe in the implied promise of the government and the regulatory agencies that since they are sheltered from profit, they will be protected from harm. Most electric utility shares are still being traded with dividend returns at or only slightly above those available from one or two-year term certificates of deposit. Increasingly, we are given to understand that when things go right, the ratepayer must receive the benefits; but when things so wrong, the shareholder must take the loss.

CWIP ~~is~~ elementary justice and good sense. It must be extended in full to attract capital. Capital is already jittery because there is a growing perception that construction might never be placed in rate base. I have received letter after letter from members stating that they are withdrawing from the utility market for these reasons.

Without CWIP, any new efficient construction is simply out of the question. With CWIP, construction of efficient generating facilities can and will proceed because the cash flow will support the investment.

In closing, let me add that the Society was delighted that the federal government had taken the lead in the blanket restoration of CWIP to rate base even if only at the level of 50 percent. We hoped it would be a signal that the states would soon follow. We strongly recommend that these bills be tabled.

APPENDIX

CWIP

CONSTRUCTION WORK IN PROGRESS

The inclusion of Construction Work in Progress (CWIP) is felt by many to violate a traditional procedure in utility ratemaking, which is that customers begin to pay for facilities when the facilities become, as the regulatory phrase puts it, used and useful. In other words, electric utilities generally are not permitted to include in their rate base a generating plant or transmission and distribution lines until the plant is generating electricity and the lines are carrying it to customers.

In point of fact, 37 states, including Pennsylvania, now include all or part of CWIP in the rate base. Some of these--including Pennsylvania--permit CWIP in certain special circumstances, such as installation of pollution control equipment. FERC has also in the past allowed CWIP in special circumstances, including a showing of financial hardship by a utility, but FERC action has been on an ad hoc basis in the past. The proposed FERC rule would make the application of financial hardship uniform.

The FERC proposal also would affect only a small proportion of electric sales--wholesale and interstate sales, primarily.

Nevertheless, fears are being expressed that FERC action would set a precedent state regulators would find difficult to resist, and there is strong feeling in some quarters that including CWIP in the rate base is unjust, since it would require electric customers to pay for generating plants that may not benefit them.

In the first place it is important to lay to rest the myth that putting CWIP in the rate base requires customers to pay for generating plants before they are placed in service. It does not. It requires customers to pay the cost of capital borrowed to build the plant, to pay the interest on funds as it accrues. Investors--stockholders and lenders--still put up the money for the plant as they always have and always will.

The questions that present themselves in the matter of CWIP, and which merit detailed answers, are these:

1. Why is the electric utility industry asking for CWIP now when it was content in the past to wait until a plant was placed in service before it went into the rate base?
2. What about the equity of CWIP? Is it fair to customers?
3. Does the customer benefit in any way from CWIP, or are the benefits enjoyed solely by the utility company?

It might be appropriate to point out, parenthetically, that the utility industry is unique among business and industry in having to defer for extended periods of time the recovery of the cost of capital invested in new facilities. Other business and industry recover in the price of their goods and services all variable and fixed costs, including the capital costs of investments in research and facilities. Competitive market forces may influence how quickly these costs can be recovered, but the aim of all business and industry is to recover costs on a continual and as current a basis as possible.

Electric utilities must operate differently. They are generally permitted to include in rates only the cost of plants and facilities that are actually producing and delivering electricity. However, since funds must be borrowed to finance new construction, which goes on continually, the utility is required to pay the interest on such money as it accrues, and to pay dividends to stockholders who invest their money and expect a fair return on their investment. Because the utility must pay the interest as it accrues, it is permitted to carry on its balance sheet as "income" an amount approximately equal to the interest it has paid plus a sum that would represent a fair return to stockholders. This is an accounting device called Allowance for Funds Used During Construction (AFUDC), and it amounts to a promissory note to the utility--an IOU from customers that the utility eventually can cash and recover the money it has already paid out.

When the new electric facilities go into service, the accumulated AFUDC becomes part of the cost of the facilities and thus becomes part of the rate base. This means that the capital costs already paid by the utility during the period of construction are recovered by depreciation charges over the life of the plant and, of course, the utility is also entitled to earn a fair rate of return on such costs over that same period. In the current economic climate for utilities, placing a large new generating plant in service generally means a very substantial and abrupt increase in rates, because customers not only must begin to pay for the plant itself, they must begin paying the interest costs on borrowed money that have been deferred during the period of construction.

A reasonable question, then, is why the electric utility industry is seeking CWIP now when it has been content in the past to wait until facilities were placed in service before they were included in the rate base. There are two major reasons: (1) The soaring costs of new construction; and (2) The extended time frames for new construction.

Prior to the late 1960's, an electric utility could expect to build a new coal-fired generating plant for $100 a kilowatt of capacity, or even less, and could expect to bring a new plant into service in three to five years, from initial site preparation to actual generation of electricity. Today, an electric utility anticipates a cost of $1,500 per kilowatt of capacity and higher for new base-load generating facilities--no matter what kind--and anticipates a time frame of 10 to 15 years for construction.

Although demand for electricity in the 1960s and very early 1970s was growing at an annual rate of 7 to 8 percent, construction costs were stable and as late as 1965 CWIP represented less than 5 percent of total electric plant in service, and AFUDC represented less than 4 percent of net income. Moreover, the electric utility industry and their customers were reaping the benefits of economies of scale represented by large-capacity, highly efficient generating plants. New plants generally produced electricity at a lower unit cost than the average of plants in service and resulted in lower rates.

Inflation and the emerging environmental consciousness of the nation were the major factors changing the construction picture for the electric utility industry. Inflation increased the cost of capital by two, three and even four times its cost during the 1960s, and pushed up construction costs even faster. Bonds which could be sold for interest rates of 3 percent or less prior to 1965 averaged 8.79 percent in 1970 and 14 percent in 1980. In 1972 construction costs rose three times faster then the Consumer Price Index, and in 1975 rose more than double the CPI. Various environmental regulations added to the cost of plants and increased construction time frames.

But with growth in demand continuing unabated, the electric utility had to add generating capacity, no matter the cost of capital or the cost of construction. Power shortages in the late 60s added impetus to the construction program in Pennsylvania as utilities sought to bring reserve margins up to a reasonably safe level.

The amount of construction work in progress, as a percentage of total electric utility plant nationally, climbed inexorably, from 17 percent in 1970, to 25 percent in 1974, to 33 percent in 1978, and to 41 percent in 1980. AFUDC climbed even faster, reflecting the higher cost of capital necessary to finance construction. AFUDC, as a percent of net income, rose from 17.8 percent in 1970, to 31 percent in 1974, and to 44 percent in 1980.

In other words, by 1980 44 percent of electric utility income was not cash. It was a promissory note, an IOU. But such income cannot be used to pay interest when it comes due, or to pay dividends to investors. Electric utilities began to experience acute cash flow problems by the middle 1970s, and these problems have grown.

The financial community, which tends to regard AFUDC as funny money, reacted predictably: electric utility bond ratings declined; common stock values declined. Utilities began to have problems borrowing money at acceptable rates of interest, and problems attracting new investors.

Including CWIP in the rate base would clearly improve cash flow for electric utilities; but would this step be fair to consumers?

Fairness is perhaps a subjective determination. But one fact can be stated without equivocation: the principal impetus for construction of new electric generating capacity for the last 20 years has been increased use by existing customers. Demand for electricity increased by nearly 2½ times in Pennsylvania since 1962, while the number of customers increased by about one third.

The average residential customer in Pennsylvania used 3,708 kilowatt hours a year in 1962. Average use in 1980 was 7,621, more than double the amount in 1962. While growth in the number of customers certainly contributed to the need for new facilities, increased use by existing customers was far more important.

Families that bought a second TV or a new frost-free refrigerator, whose teenage children received their own hair dryers, which bought new electric tools, or put an electric heater in a new room all were sending a message to their electric utility to add new generating capacity. They were saying, in effect, "My need for electricity is growing, and I expect you, my electric utility, to provide me with all the electricity I need today, tomorrow and ten years from now."

It does not appear to be unreasonable or unfair to ask customers to accept some financial obligation in connection with the construction of the new capacity their demands require. That obligation would be to pay, rather than defer, the cost of capital needed for the construction.

However, the question of fairness notwithstanding, electric utility customers should insist that CWIP be included in the rate base. They will be better off in the long run. They will pay less in the long run. They will be assured of more reliable service in the long run.

If CWIP is included in the utility rate base, electric rates will rise in small annual increments as capital is invested in facilities under construction. Without CWIP, rates will rise significantly at the time a new plant is added to the rate base. Theoretically, other factors being equal, the effect on the consumer would be the same. CWIP in effect, would be pay-as-you-go, and AFUDC would be deferred payment.

However, it should be pointed out that the total dollar amount paid by the customer will be greater by deferring payment, because the customer not only must eventually pay the deferred interest that has accumulated, he must pay interest on the interest. This can be demonstrated easily. A utility borrows a million dollars a year at an interest rate of 10% for two years for construction purposes and place the $2 million plant in service at the end of the second year. If CWIP is in the rate base, customers pay $100,000 in interest charges the first year and $200,000 the second year, for a total of $300,000, and then begin to pay for the plant itself. If CWIP is not in the rate base, customers defer payment of $100,000 in interest the first year. At the end of the second year, when customers begin paying for the plant and the accumulated interest, the $100,000 of deferred interest the first year has accumulated $10,000 worth of new interest, so the customers are paying $310,000 in interest charges in addition to the cost of the plant.

But, other factors are not equal. There is a demonstrable relationship between AFUDC as a percent of net utility income and utility bond ratings. As the percentage of AFUDC increases, cash flow problems increase, bond ratings tend to fall, and the market value of common stock declines. When bond ratings fall, a utility pays higher interest charges on borrowed funds. As common stock prices decline a greater number of shares must be sold to maintain an acceptable ratio between debt and equity.

The following financial facts are revealing:

--Between 1971 and 1981 the bond ratings of 88 investor-owned electric utilities were lowered; the bond ratings of 17 were raised.

--Utility common stock, on the average, sold at 130 percent of book value in 1971 and at 72 percent of book value in 1981.

--Between 1970 to 1980 electric utility interest coverage fell from 2.85 to 2.03. In other words, earnings were nearly three times greater than debt service in 1970, and just over twice debt service in 1980. When interest coverage falls below 2.0, utilities cannot sell additional bonds.

--In 1980 three investor-owned electric utilities had AAA bond ratings. For these three, AFUDC was only 21.9 percent of net income. Forty-one companies had BBB ratings. AFUDC averaged 50.2 percent of net income for these companies.

--During 1981, the yield on bonds issued by electric utilities with an AA rating was 15.30 percent. The yield on bonds of companies rated BBB was 17.8 percent.

Perhaps even more important than the higher interest charges is the difficulty of marketing bonds at all with a bond rating of BBB. Such bonds no longer become an acceptable investment for many pension funds, which are important investors in electric utility securities. State laws or pension fund rules limit the degree of risk for investments by pension funds, and utility securities, once favored because of low risk and reliable yield, are increasingly less favored.

On a $50 million bond issue with a 20-year maturity, one percentage point of interest is $10 million. If the total cost of a new generating facility is $1 billion, and half of it is financed with first mortgage bonds with a 20-year maturity, electric customers could save $100 million if their utility enjoyed a bond rating of AA instead of A.

Pennsylvania's seven major investor-owned electric utilities project capital expenditures over the next decade at nearly $15.5 billion. If traditional patterns of financing these expenditures follow, more than $7 billion worth of long-term bonds will be sold by the seven companies. At present, one company has a bond rating of AA, one of A, four of BBB and one of BB. (These are Standard & Poor ratings). If all moved up one notch in ratings, Pennsylvania electric consumers would save as much as $1.4 billion over the 20-year life of the bonds.

Even savings of this magnitude are perhaps not so compelling as the question of the ability of the electric utility industry to finance new construction. At this point the problem is not one of the cost of electricity but rather of the availability of electricity.

It sounds self-serving for the electric utility industry to say that what's good for the industry is good for its customers. Within reasonable limits this is an incontestable fact with a dollars-and-cents application for every user of electricity.

Various least-cost options, some of them highly speculative, for meeting energy needs are being suggested to Pennsylvanians. There is considerable doubt that the options collectively would save consumers as much money as a boost in the bond ratings of the major investor-owned electric utilities.

If this improvement in bond ratings could be brought about--as seems very possible--by inclusion of CWIP in the utility rate base, the long-run benefits to customers argue emphatically that this action be taken by the Public Utility Commission.

One final point should be noted. Some critics argue that inclusion of CWIP in the utility rate base will lead to over building. Empirical data do not support the conclusion. Logic as well as evidence exposes this charge as groundless. The average interest rate on new long-term debt in 1980 was 14 percent, and the average return on common equity was 11.4 percent. When a utility must pay more to borrow money than it can hope to earn, there is a dis-incentive to build, not an incentive. The dis-incentive exists whether CWIP is in the rate base or not.

Despite the significant and measurable advantages to the customer of including CWIP in rates, some critics will argue that today's customers are paying for benefits tomorrow's customers will enjoy.

In point of fact this is the condition of existence for all of humankind. The standard of living we enjoy as a society today is built on the investments, financial, sociological, educational and industrial made by generations long past. More than half a century of declining prices for electricity was the fruit of investments made by customers of 1910, 1930 and 1950. The price of food, appliances, housing, automobiles--anything we purchase, in fact--is the result in part of the investments in research made by previous generations.

Millions of taxpayers finance on the current basis the construction of schools, housing and public improvements like water and sewer lines that they or their children may or may not use. But the investments are made because they are deemed in the best interests of a well-ordered society.

A healthy investor-owned electric utility industry is also in the best interest of a society that quite literally runs on electricity. An industry that can borrow funds at favorable rates of interest and that can undertake massive construction projects to meet needs 10 to 20 years in the future is an industry which will serve the vital need of society for adequate and reliable electric service at the lowest possible cost to consumers.

It is ironic that the initiative for including CWIP should come from the investor-owned electric utility industry. CWIP does not mean higher return for utilities. It does not mean higher earnings or improved dividends. It does mean improved cash flow, and it is entirely possible that improved cash flow may enable utilities to improve earnings over the long-run, although these are regulated by the Public Utility Commission. But there is actual, tangible dollar benefit for customers--demonstrably lower costs.

Senator Chafee. Well thank you, Mr. Spang.

Mr. Huneke.

STATEMENT OF JOHN H. HUNEKE, PRINCIPAL, MORGAN STANLEY & CO., INC.

Mr. HUNEKE. Senator, may I apologize for enjoying your spring day a little too long at lunch hour. We don't have weather like this yet up north.

Senator CHAFEE. I'm glad you enjoyed it.

Mr. HUNEKE. My name is John Huneke, and I'm a principal of Morgan Stanley & Co. I have been involved with my firm's activities in raising capital for investor-owned utilities for several years.

I appear today in opposition to the proposed legislation to limit the FERC's authority to include construction work in progress in rate base.

Since the FERC rulemaking on this subject, there has been continued deterioration in the financial condition of electric utility companies which are endeavoring to complete large construction programs.

For many of these companies there is significant concern whether programs underway will be able to be completed.

The FERC rulemaking will produce the much-needed cash-flow that these companies need.

Given the financial condition of the sector of this vital industry and the high level of investor concern at this time, we believe it is more important than ever that legislation not be passed which would eliminate or narrow the FERC rulemaking on CWIP.

The current practice represents good regulation, and will provide benefits for both ratepayers and investors.

We have heard all the previous testimony as to the advantages of CWIP to the consumer. One point that is worth reiterating is that allowing CWIP will lower financing costs.

Financially, weakened utilities pay higher interest rates and higher costs for equity financing than financially healthy utilities.

Just this week, Texas Utilities Electric Co., which is rated AA, sold $100 million worth of first mortgage bonds with a 30-year maturity at 13.7 percent.

Toledo Edison a few days prior to that, rated BBB, was only able to sell a 7-year issue of bonds, and that was at 15 percent.

Had that Toledo issue been a 30-year issue, the interest costs would have been greater than 16 percent, or about 2½ percent higher than the Texas issue.

The major difference between these two companies is cash-flow. Texas Utilities has allowed over 50 percent of its construction work in progress in rate base. Toledo Edison has very little construction work in progress in rate base.

Because these costs are directly passed on to ratepayers, electric rates for less financially sound utilities will be higher.

Very importantly, CWIP will help assure the availability of needed power in the future. The electric utility industry is reluctant to begin new projects beyond the current cycle of units under construction.

Many utilities tell us that they have categorically decided not to embark on any new construction unless they are assured that it can be financed and built without jeopardizing their future financial condition.

Even if companies were not to take this position, it would be very difficult to get investors to put up the funds for major generating projects in the future without CWIP.

CWIP in rate base is highly important to investors in other financial market participants who follow the utility industry. They favor CWIP because it will help the financial condition of the electric utility industry.

The industry's financial condition today is far from strong. In fact, in contrast to Mr. Bergland's statement earlier today, the financial condition of this industry has continued to deteriorate.

In 1972, the average bond rating for the electric utility industry was AA. Today this average is BBB, the lowest investment grade category. And I'm concerned that it is going to be lower.

Downgradings of debt have outnumbered upgrades by a sizable margin. And, unfortunately, this is especially true for those utilities which still have large construction programs.

Of the hundred or so largest electric utilities, 29 are now rated BBB. And for the first time, the ratings of an additional 11 companies have been reduced to BB, making them speculative investments.

These low ratings reduce the availability of capital to these companies, and increases their financing costs which ultimately results in higher rates to their customers.

Incidentally, when a company's debt declines to a BB rating, its ability to raise capital on any terms or at any cost is highly questionable.

The primary problem of most utilities today is inadequate cashflow. Although earnings levels have improved from many companies, an alarming portion of earnings is allowance for funds used during construction; a noncash-producing accounting item.

Investors are sensitive to cash-flow because dividends and interest are paid from cash, not merely accounting earnings.

Inclusion of CWIP in rate base is the most direct way of improving cash earnings.

The utility industry is probably the only industry that cannot say no to the building of future capacity. There is no conceptual reason why the construction and completion of this capacity should be carried by shareholders alone. It is the ratepayer' need for electricity in the future, not the investors' need for return that triggers the decision to build.

Having seen the market value of their investments devastated by downgradings of debt and dilution of common stock earnings, and with a fear that companies will not be able to continue to pay dividends, investors are no longer willing to carry the total burden of constructing new electric generating units. They have plenty of other investment alternatives, including huge amounts of U.S. Government bonds, as you well know.

It is evident to us that ratepayers will have to participate if the funds to build future plants are to be available from the capital markets.

The inclusion of CWIP in rate base is both fair and necessary; fair in the way it balances a utility's obligation to serve its customers with requirements of its shareholders and lenders, and necessary because it helps to ensure that future generating capacity will be available when needed.

Thank you.

[The prepared statement of Mr. Huneke follows:]

STATEMENT

OF

JOHN H. HUNEKE

PRINCIPAL

MORGAN STANLEY & CO. INCORPORATED

RELATING TO

S.817, S.1069 and H.R.555
TO AMEND THE FEDERAL POWER ACT
TO LIMIT
CONSTRUCTION WORK IN PROGRESS IN RATE BASE

BEFORE THE

SUBCOMMITTEE ON ENERGY REGULATION

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

WASHINGTON, D.C.

APRIL 12, 1984

My name is John H. Huneke. I am a Principal of Morgan Stanley & Co. Incorporated and am involved with my firm's financing and advisory activities with the investor-owned utility industry. Morgan Stanley is a leading investment banking firm in the underwriting and placement of securities for corporations. We provide investment banking services to a broad group of client companies in the electric, gas and telephone sectors of the utilities industry. As an investment banking firm, we are in continuous contact with all major institutional debt and equity investors numbering over 1,500 in this country and abroad.

I appear today in opposition to the proposed legislation (S.817, S.1069 and H.R. 555), bills to limit the FERC's authority to include construction work in progress (CWIP) in rate base.. My remarks will summarize why we believe the FERC rulemaking on CWIP represents good regulation from the point of view of all constituencies: the ratepayers, the electric utilities and their investors. Although there has been much debate about CWIP, the arguments have been overly concerned with the short-term implications of the FERC rulemaking. In our view, rate base treatment of CWIP offers, in the short and the long term, important benefits to both ratepayers and investors which must not be overlooked as Congress considers the proposed legislation.

Hearings were held in the House of Representatives on this subject a year ago at which a member of my firm testified. Since that time, there has been continued erosion in the financial condition of electric utility companies which are endeavoring to complete large construction programs. For many of these companies, there is significant concern whether programs underway will be able to be completed. The FERC rulemaking will produce much needed cash flow for these companies. Given the financial condition of this sector of this vital industry, we believe that it is more important than ever that Congress does not pass legislation to eliminate or narrow the FERC rulemaking on CWIP.

CWIP in Rate Base is Beneficial to Ratepayers

I believe that ratepayers benefit in a variety of ways from the inclusion of CWIP in rate base:

1. Lower plant costs with CWIP

Over the life of a generating unit, ratepayers will pay less if a utility is allowed to earn a cash return during construction than if capital costs are accrued and included as rate base in the total cost of generating plant when construction is completed. Because of the long construction periods for most generating units currently being built, capital costs can represent over 40% of the total cost of a new plant. Although electric rates will be higher in the short term if financing costs are recovered during the construction period, over the life of a new plant the total costs to ratepayers will be lower, minimizing future utility rates.

2. Encourages conservation

Recent experience proves that rising energy prices can dramatically restrict energy consumption. When CWIP is not in rate base, electric rates are held artificially low. We believe that allowing CWIP in rate base will permit price elasticity in the market to operate, will encourage conservation habits, and will avoid misleading signals to consumers which result from pricing electricity below its true cost.

3. Minimizes "Rate Shock"

Inclusion of CWIP in rate base will minimize "rate shock": the large rate increases which can occur when new plants are placed in service. By allowing portions of CWIP in rate base, new facilities can be phased into rate base in steps rather than through one sudden, often substantial increase that would be required if CWIP is not allowed. Such a pre-operational phase-in will minimize the "rate shock" on consumers and, at the same time, give investors the assurance that they require that their investment will be recognized upon completion of construction. Company estimates show the need for rate increases ranging as high as 70-80% once a unit currently under construction is completed. With CWIP, these rate requirements can be reduced to much more manageable, and politically palatable, increases. We do not believe that proposals by state regulators to postpone the inclusion of plant in rate base is the answer. These proposals are seen as a change in the groundrules by investors who have invested in good faith under the assumption that utilities will be allowed to earn on plant when units are finally completed.

4. Lower financing costs for a financially healthy utility

It is a fact that financially weakened utilities pay higher interest rates than financially healthy utilities. This differential is greatest when the debt of companies falls below investment grade which has occurred for several companies struggling to complete large construction programs. In addition, the cost of equity capital is higher. Because these costs are directly passed on to ratepayers, electric rates for less financially sound utilities will be higher. Other things being equal, utilities with CWIP in rate base will have lower costs of financing and lower rates to consumers than companies without CWIP.

5. Assurance of needed future generation

In contrast to other countries, the U.S. has always been able to fuel its economic growth with an abundant supply of low cost electric energy. To allow future growth, it is imperative that electric energy continue to be freely available. The electric utility industry has had such a difficult financial experience in the past decade that it is reluctant to begin new projects beyond the current cycle of units under construction. Indeed, many utility companies have categorically stated they will not embark on new generating additions unless they are assured that these can be financed and built without jeopardizing their future financial condition. But even more important, many electric utilities need help today to complete the construction which is currently underway. This is capacity which we believe will be needed later in the 1980's as our economy resumes its growth. Inability to complete the next generation of electric facilities could be costly to our future growth. It is apparent to us that CWIP is a direct and effective way to ensure that the necessary funds will be available for building new generating additions.

CWIP is Also Beneficial to Utilities and Their Investors

The issue before you -- CWIP in rate base -- has become increasingly visible in the investment community in recent years and today is a subject to which analysts and other financial market participants who follow the utility industry have become highly sensitive. It is therefore appropriate to review investor attitudes on this subject.

1. The Electric Utility Industry: Still in the Recovery Stage

The electric utility industry's financial condition today is far from strong. Although there has been stabilization or even improvement in some sectors of the industry, the averages mask the continued decline of many companies. I can demonstrate this with bond ratings, which are the single best measure of a utility's financial health. In 1972, the average bond rating for the electric utility industry was double A; today this average rating is triple B (the lowest "investment grade"). Downgradings of debt ratings have continued to outnumber upgrades by a sizable margin. Unfortunately, this is especially true for those utilities which still have large construction programs. Of the 109 largest electric utilities, 29 are now rated triple B. And, for the first time, the ratings of an additional 11 companies have been reduced to double B, making them "speculative" investments.

As is well known to professional investors, a rating lower than single A eliminates important sectors of buyers of debt securities who cannot, by law, or will not, by policy, buy such low-rated securities. This reduces the availability of capital to such companies and increases their financing costs, which ultimately results in higher rates to their customers. When a Company's debt declines to double B rating, its ability to raise capital on any terms and at any cost is highly questionable, putting such companies at the mercy of the capital markets which may be closed to them.

Inadequate recognition of construction work in progress, while not the only cause of the industry's financial weakness, is one of the main causes. Over the next four years, utilities must spend over $121 billion, primarily to complete the remaining construction projects to which they are committed. For the electric utilities with the larger construction programs and sizable amounts of CWIP not in rate base, financial health remains poor or continues to deteriorate. Specifically, 31 of the 40 electric utilities with triple B or below rated debt are not allowed by regulators (in their principal state of operation) to earn a needed cash return on their construction work in progress. In contrast, 21 of the 33 electric utilities rated double A or better are allowed to earn a cash return on a major portion of their construction work in progress.

2. Fitting the Cure to the Illness

A primary problem of most electric utilities today is inadequate cash flow. Although earnings levels have improved for many companies, an alarming portion of earnings for the industry is allowance for funds used during construction (AFDC), a non-cash producing accounting item. At the current time, AFDC represents over 50% of reported earnings for the industry. Investors are sensitive to cash flow because dividends and interest must be paid from cash, not merely accounting earnings. Investors are concerned for good reason: the industry on average pays out about 73% of its earnings in dividends. As a result, cash earnings are less than cash dividends by a substantial amount. Inclusion of CWIP in rate base is the most direct way of improving cash flow for those companies most in need --namely those with heavy construction programs.

Balancing the Obligation to Ratepayers and the Requirements of Investors

The utility industry is probably the only industry that cannot say "no" to the building of future capacity. An industrial company can say "no" to new investments if it does not expect to earn adequate returns. Utilities, however, under the terms of their franchises and their obligation to serve, must build to serve future customer needs. In addition, most other industries are able to charge their "CWIP in rate base", i.e., to include the cost of building new plants in current product prices. The ability of utilities to do the same is, of course, the issue before you.

There is no conceptual reason why the construction and completion of new plants should be carried by shareholders alone. It is the ratepayer's need for electricity, not the investor's need for return, that triggers the decision to build. Having seen the market value of their utility investments devastated by downgradings of debt and dilution of common stock earnings, investors are no longer willing to carry the total burden of constructing new electric generating units. Through their buy and sell decisions, investors are clearly indicating that the financial burden of new construction is too great to bear alone. It is evident to us that ratepayers will have to participate if the funds to build future plant are to be available from the capital markets.

We believe that the inclusion of CWIP in rate base is both fair and necessary: fair in the way in which it balances a utility's obligation to its ratepayers with the requirements of its shareholders and lenders, and necessary to ensure that future generating capacity will be available when needed.

Senator **Chafee**. Thank you.

Mr. Benore, in the course of your testimony you stated that a dollar in present—a dollar in the present and the dollar in the bush—the bird in the bush is valued more highly by the investment market than the dollar in the future.

Mr. **Benore**. Yes, sir.

Senator Chafee. And no one would argue with that.

But doesn't this apply to consumers as well? Isn't it the question of who has the present value of the dollar, the consumers or the company?

Mr. **Benore**. Well, I guess that if I were a consumer and I could get away without paying for something now and would pay for it tomorrow, I'd be inclined to do that.

Senator Chafee. Yes.

Mr. **Benore**. The problem is that if you're an investor and you have a lot of investment alternatives and someone offers you this: "Dear Utility Company, I owe you 1 dollar over the next 30 to 40 years. Your Customers." Or gives you this [indicating to a dollar bill]. There's no doubt about what the investor is going to say.

The investor, therefore, has choices: U.S. Government bonds, a lot of other common stocks. And one of the unfortunate things with respect to the customer's best interest is that we, as customers, need them as investors. And if we cannot lure their capital investment into the utility company, then you and I, as customers, are going to be left holding the bag in the long term; that is, we're going to have insufficient amounts of power, it's going to be detrimental to living standards, to growth, employment, the security position of the country, and a whole host of other things.

So it isn't necessarily what we want as consumers. Obviously, we want to stretch that out if we possibly can. But because we have to lure the investor to invest their hard-earned dollars to provide us with future power service, we really don't have that choice.

In 1974 and 1975, there were many instances where electric utility companies could not attract the capital that they needed. Again in 1980 and 1981, that was also the case.

Senator Chafee. What's the case now, 1983–84?

Mr. **Benore**. The case now is in some ways better and worse. This is an industry that isn't a homogeneous industry anymore. It's really two industries; companies that are building nuclear powerplants that have gigantic problems, perhaps the most catastrophic thing to happen to this industry, or that portion of the industry since the breakup of the holding companies. Those kind of companies are talking about bankruptcy. Those kinds of companies are having to reduce and omit their common stock dividends.

On the other hand, we have companies that aren't building nuclear powerplants that, indeed as was mentioned earlier today, are recovering in terms of their financial health and wellbeing.

So the answer to your question is, in many ways, because nuclear powerplants under construction are so prevalent in terms of affecting so many companies, this industry is sick. It is in a financial crisis. But you can make a very good distinction within the industry, to the extent that you can find companies that are not building nuclear powerplants that they are getting healthier. I didn't say that they're healthy, though some of them indeed are, but they truly have had some financial recovery in the last several years.

Senator Chafee. When you said they were not healthy, were you referring to the nuclear facet, the nuclear type plant, or companies with nuclear plants or to the other side, nonnuclear?

Mr. Benore. I was saying that the companies building nuclear powerplants have catastrophic problems. The companies not building nuclear powerplants are becoming financially resuscitated in general. Not all of them, or I sense not even on average up to what investors would consider a satisfactory level of financial integrity, but certainly making progress in that direction.

It's a two-part kind of industry. It isn't the same homogeneous industry that we used to know.

Senator Chafee. What about this quote from one of your compatriots in the investment business—well, you're not in the investment business directly, are you?

Mr. Benore. The subsidiary company, Paine, Webber, Mitchell, Hutchins, is not involved in the underwriting of securities.

Senator Chafee. All right.

Mr. Huneke is with a major investment banker. Here is a statement by Solomon Brothers' analyst, Mr. Mark Luftig, April 2, 1984, in Fortune magazine—that's a proper place for a financial analyst to be writing, I think, don't you, in Fortune.

Mr. Luftig was referring to the sharp divergence between those utility companies that are going broke and those that are doing well. And he said, "It's like two different industries. For the first time in years, many utilities are asking us what to do with excess cash."

Is that a common experience in the utility business?

Mr. Huneke. I would say that you're talking about a very small universe of companies at the present time.

We tried to do some quick numbers this morning, and it really shows that about 75 percent of the utilities are still engaged in major construction program. You're probably talking about less than 25 percent of the utility industry that is over the hill, as we say. They have finished their construction programs and are in a position where they're getting quite healthy financially.

But there again, this issue of construction work in progress is not applicable to those companies. Construction work in progress will help the companies that are building our future generating capacity. Those are the companies that are going to need CWIP, not the ones that are healthy.

Senator Chafee. But, of course, everybody gets it.

Mr. Huneke. Well, not the ones that are—it's not the ones that are healthy, it's the ones that are not engaged in construction.

Senator Chafee. Are those the ones that are healthy?

Mr. Huneke. Generally speaking, yes.

Senator Chafee. So the moral of the story is, don't engage in construction.

What do you people figure is an adequate reserve powerwise for these companies? They talk of 30, 33 percent, 40 percent and so forth capacity reserve. What do you consider, Mr. Spang?

Mr. Spang. I think I'd like a crack at that. I think that historically we'd be talking about 20, 25 percent as being an adequate reserve above the peak period. But at the present time and so forth, I think that in many cases that reserve is considerably above that. So the questions now being raised and so forth, is that reserve too high, and should the ratepayers really be asked to pay for that additional reserve beyond that 25 percent? Let's say at 40 percent or something of that kind.

But you have got to understand, however, that these plants are a long time in the building. And when you start talking about 10 and 12 and 15 years in some cases, you know, for the building of a plant, you've got to project at the time that you're starting the plant and so forth and you have all of your engineering work and what have you into place. It's a different ballgame. You have to—you have been used to maybe 5 or 6 percent, you know, annual growth. And if you project that out, you're going to need this kind of capacity in the year 1995. Well, the year 1995 comes along and because of recession, because of 1 thing or 100 reasons and so forth, it doesn't occur. But that's no reason then to fault the company for not doing a good job in relation to making its projections, because the projections were made at the best of the state of the art at that particular time.

Senator CHAFEE. OK. Fine. Would you like to tell us who the lady is seated at the table with you?

Mr. SPANG. This is my wife Mary Ann. She came along in order to nudge me in case I forgot anything.

Senator CHAFEE. Well, he's done a very good job, I can report to you, Mrs. Spang.

Well, thank you all very much.

Mr. BENORE. Mr. Chafee.

Senator CHAFEE. Yes.

Mr. BENORE. I don't know if I'm permitted this, but there were a few things that transpired this morning that I hope, in an unpresumptuous way, I could quickly try to clarify.

Senator CHAFEE. I tell you what, my problem is this, I have an amendment up on the floor that I am dealing with. Do you think you could submit this in writing?

Mr. BENORE. Yes; I could.

Senator CHAFEE. All right. That would be good.

Mr. BENORE. I could dictate it to the transcriber here.

Senator CHAFEE. I tell you what we'll do—how long is your statement?

Mr. BENORE. I think I could do it in 5 minutes.

Senator CHAFEE. All right. I'll see how I go along here. I may have to go.

Mr. BENORE. Very quickly. With respect to panel No. 2. There was a great deal of emphasis that the State of Rhode Island did not allow construction work in progress in rate base. I think for the record it would be good to put that into perspective. By our count, they are 1 of 17 commissions in the United States that do not allow construction work in progress in any way. All of the rest of the commissions do.

Item No. 2. With respect to the EEI panel. I would agree very much with the chairman that was chairing that panel that indeed, the electric power industry does not communicate adequately with people to try to explain to them the matter of utility economics. And I really agreed very much with that.

Senator CHAFEE. I tell you, Mr. Benore, it turns out that I am required to go over there. This is, as you can understand, this is kind of a hectic day.

Mr. BENORE. Yes.

Senator CHAFEE. I'm on the Finance Committee, and we have got a bill up over there.

Thus, if you could submit the balance in writing and we will study it. Do you think we could get it in 10 days?

Mr. BENORE. Yes, sir, I can.

Senator CHAFEE. All right. Send it right to the committee.

Mr. BENORE. I'd be pleased to.

Senator CHAFEE. And we might possibly have written questions for you, and if you could be kind enough, all of you, to respond to them. I'm not sure whether we will or not.

Thank you all very much for taking the trouble to come here. We appreciate it.

Mr. BENORE. Thank you.

Senator CHAFEE. That concludes the hearing.

[Whereupon, at 1:55 p.m., the hearing was adjourned, subject to the call of the Chair.]

CONSTRUCTION WORK IN PROGRESS POLICY ACT

FRIDAY, MAY 18, 1984

U.S. Senate,
Subcommittee on Energy Regulation,
Committee on Energy and Natural Resources,
Washington, DC.

The subcommittee met, pursuant to notice, at 9 a.m., in room SD-366, Dirksen Office Building, Hon. John H. Chafee, presiding.

Present: Senators Chafee and Warner.

Also present: Howard Useem, professional staff member; Elizabeth Moler, counsel for the minority; and Benjamin S. Cooper, professional staff member for the minority.

Senator Chafee. Good morning everyone. Could we have our first panel come forward and take places at the table.

That panel consists of Dr. Cooper, Ms. Campbell, Ms. Caplan, Mr. Shulman, Mr. Hamm, and Mr. Harris.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, A U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator Chafee. Today, the Subcommittee on Energy Regulations is holding the second of 2 days' hearings on legislative proposals that would limit the inclusion of construction work in progress, so-called CWIP, in the rate base of wholesale electric utilities.

Now, the three bills before us today have been proposed by those of us who are concerned with the consequences of the change which was only made a year ago in the CWIP regulation by the Federal Energy Regulatory Commission, FERC.

Up until a year ago, the history in this country in the utility rate regulation had always been that CWIP was not included in rate base.

Traditionally, ratepayers were not charged for the cost of construction of a new electric facility before the plant was producing and delivering. This is the so-called "used and useful principle" that has been at the heart of utility ratemaking practices for 95 years.

Now, the Federal Energy Regulatory Commission has asked us to abandon this principle, saying that consumers should welcome this opportunity to pay these higher rates today against the frightening possibility that they may have to pay much higher rates tomorrow.

I'm not convinced that this accurately depicts the real choice in front of us.

As I pointed out in the April hearing, FERC itself, in the order which instituted the rate change, concedes that, quote, "No present value analysis will show that CWIP base rates are less costly to consumers," end of quote.

Additionally, I have not seen any assurance that utilities would pass on reduced costs to the ratepayers in the form of lower rates even if they did occur.

We heard testimony in April which I believe supported this view.

Now, it seems to me the real choice before us boils down to deciding who should bear the financial burden and risks of new construction—the utility and its shareholders, or the ratepayers?

The courts decided this question almost a hundred years ago, and have reaffirmed many times since then that the shareholders, and not the ratepayer, should bear these costs. And I have not seen any evidence presented that convinces me we should overturn this precedent, except as an extraordinary remedy.

Now, this is exactly what my bill proposes to do, in that it allows CWIP in those situations where a utility demonstrates severe financial hardship.

We have another lengthy list of witnesses today, and I'm sure that all of the witnesses will want to explore in detail the potential consequences of this legislation.

You all have statements. I would encourage you, each of you—not only this panel, but the subsequent panels—to summarize your written statements.

And additionally, it is my hope that in your summarization you will address the specific impacts of this legislation on matters that you are familiar with rather than talking in generalities.

So why don't we start just as the names appear on the list with Dr. Cooper.

Dr. Cooper is the Director for Energy for the Consumer Federation of America.

STATEMENT OF DR. MARK N. COOPER, DIRECTOR OF ENERGY, CONSUMER FEDERATION OF AMERICA

Dr. COOPER. Thank you, Mr. Chairman.

As you have mentioned, we have submitted testimony and a lengthy research report that underlies that testimony, and I will just briefly summarize the contents.

The 200 member groups of CFA are particularly concerned about Federal policies dealing with Construction Work in Progress, and I want to clear up the central issue that was left hanging, I think, at the last hearing.

What are the consumer economics of CWIP? CWIP is not in the consumer interest, except where utilities are under conditions of extreme financial distress, or where it is being applied through pollution control devices.

CWIP is absolutely not a case of "pay me now, or pay me more later." There are four reasons that CWIP means, in fact, paying more now, and more, not less, later.

First, whenever someone says pay me now, and promises a benefit later, we must look very carefully at the current costs and future benefits.

It turns out that in this case the promised benefits don't start for a long time—7 years—they take a very long time to be completed—37 years or more—and they are not very large.

Rational consumers, managing their money properly, would rather have it now to use and pay a little more later, if they have to.

Any reasonable application of economic analysis, including the time value of money, shows that consumers cannot possibly gain much from CWIP. And even if we paid less, a little less—very little less—in real economic terms, it wouldn't be much. When other factors are considered, it would probably be more.

Now, I turn to the three factors that would render it more, not less.

The second and critical factor is risk. By paying more now, we give the utilities an opportunity and an incentive to build more generating plants than they will need later.

The rate base will end up bigger than it has to be, and nonused, or unuseful projects will be continued longer than they should be.

The utilities will insist—as they always do—that ratepayers must bear the burden, lest the financial health of the industry be damaged and ultimately capital costs are penalized.

But CWIP is just an effort to end-run the judgment of those financial markets which told the utilities to stop building these plants.

Senator Chafee. Dr. Cooper, if I may interrupt for a moment, I notice there's a compulsory quorum call. I am just going to go quickly to the Senate floor to quickly respond to the live quorum call and we'll hold everything in abeyance. I will be right back.

This is going to be a little distracting this morning, that's why I wanted to get started early. We may have a series of roll calls at different times, and we will just have to bear with that.

I will be right back.

[Whereupon, a recess was taken.]

Senator Chafee. All right, Dr. Cooper, if you would be good enough to continue.

Dr. Cooper. The first reason that this is probably a case of pay me more now and more later involves risks. By paying more now, we give the utilities an opportunity and an incentive to build more generating plants than they will need later. The rate base will end up larger than it has to be, nonused and unuseful projects will be continued longer than they should be.

The utilities, of course, will insist that ratepayers must bear the burden so that the financial health of the utility is not impaired. It means paying more now, and more later.

A second reason that it means paying more now and more later is that if we pay more now for these large central station generating facilities, we are giving utilities greater incentives than they already have to overlook smaller-scale investments in conservation and alternative sources of energy. The rate base will end up composed of a mix of technologies that is more costly, less flexible, and more threatening to the environment.

We will end up paying more now, and more later for an inferior, less desirable product.

The final reason that this is a case of pay me more now—pay me now, or more later, is that CWIP, in wholesale transactions, will reduce consumer protections within the industry structure. It will squeeze the public sector, which provides some measure of competition, to discipline the investor-owned utility. It will create an incentive for IOU's to form generation and transmission subsidiaries which escape from State regulation.

Thus, consumers will be faced with the prospect of less discipline of an industry which remains largely monopolistic. That means higher rates in the future.

In sum, CWIP is certain to be a case of pay more now, and more later when we use the word "pay" in a sound economic sense.

Analyses which purport to show that consumers benefit from CWIP are simplistic arithematic exercises which do not apply basic principles of economics and do not take a look at what the impact of CWIP will be in the real world and on real world utility behavior.

Thank you, Mr. Chairman.

[The prepared statement of Dr. Cooper follows:]

Consumer Federation of America

TESTIMONY OF

DR. MARK N. COOPER

DIRECTOR OF ENERGY,

CONSUMER FEDERATION OF AMERICA

on behalf of

THE CONSUMER FEDERATION OF AMERICA,

THE CONSUMER ENERGY COUNCIL OF AMERICA,

AND THE NATIONAL CONSUMERS LEAGUE

before the

SUBCOMMITTEE ON ENERGY REGULATION

of the

ENERGY AND NATURAL RESOURCE COMMITTEE

UNITED STATES SENATE

on

LEGISLATIVE PROPOSALS GOVERNING

CONSTRUCTION WORK IN PROGRESS

April 12, 1984

1314 14th Street, N.W. • Washington, D.C. 20005 • (202) 387-6121

Mr. Chairman and Members of the Committee,

My name is Dr. Mark N. Cooper. I am Energy Director of the Consumer Federation of America (CFA) appearing on behalf of CFA, the Consumer Energy Council of America and the National Consumers League. Together we represent tens of millions of electric utility consumers. I appreciate the opportunity to appear before you today to present the consumers' view of Construction Work in Progress (CWIP) legislation.

Simply put, we are deeply concerned about CWIP and are firmly convinced that it should not be allowed to utilities except after an exhaustive, case-by-case finding that a specific utility is under the most extreme circumstances of financial distress. Congress should enact and the President should sign legislation which prevents the Federal Energy Regulatory Commission from allowing CWIP on an across-the-board basis in wholesale sales.

There are many, many reasons that CWIP is not in the consumer or national interest. However, I will focus my remarks today on the basic fact that CWIP is not in the economic interest of consumers and would be a devastating blow to consumer pocketbooks.

CWIP is an unjustified effort to override and negate the marketplace. It is a forced loan from consumers to utilities that violates the principles of our economy and flies in the face of the signals that financial markets have been sending to the utility industry for years.

Because it is such a blatant attempt to circumvent basic economics, the arguments put forward by investor owned utilities (IOUs) in favor of CWIP collapse under the scrutiny of even rudimentary economic investigation. Consumers will lose as a result of CWIP because CWIP makes no sense in light of any, and all, of the following analyses:

- o application of any reasonable assumptions about the time value of money to consumers (i. e. the discount rate),
- o application of any reasonable assumptions about the economic value of risk,
- o application of any realistic assessment of the impact of the cost of capital on investment behavior,
- o application of any realistic assessment of the impact of CWIP on the structure of the utility industry.

When these factors are combined, CWIP is shown to be an economic disaster for consumers that will become a permanent drag on their utility bills and cost them tens of billions of dollars. These conclusions are based on a reanalysis of the data that the investor owned utilities have used in an attempt to show that CWIP will help consumers. The IOU analysis is faulty in every way. A research paper prepared by CFA, entitled "The Consumer Economics of CWIP: A Short Circuit for American Pocketbooks," which I submit for the record, shows that while CWIP may serve the economic self interest of the utilities, it is not in the consumer's best interest. I will briefly summarize the findings of that report in the remainder of my testimony.

THE TIME VALUE OF MONEY AND THE ECONOMIC VALUE OF RISK

The evaluation of CWIP from the consumer point of view must be conducted as a standard financial analysis. Consumer resources (money) are to be taken in the present against the offer and possibility of reward in the future. Rational economic investors must evaluate alternative uses of their resources according to two primary factors -- the magnitude of the reward (frequently called the rate of return) each use promises to generate and the likelihood that the reward will materialize (the risk of the investment).

Discounting is the technique used to evaluate the future rewards of alternative investments. The analyst chooses a rate of return that can generally be achieved and then compares the rate offered by various alternatives available. Risk can be incorporated into the analysis by demanding a higher return (using a higher discounting factor) from riskier investment.

Under all circumstances, judgement is necessary in selecting the discount rate and assessing risk. The IOU analysis that we reviewed is far beyond the realm of reasonable judgement.

In order to justify CWIP, the analysis conducted by the IOUs must ignore each of these fundamental principles of rational economic behavior. It treats consumer's money as though it has no time value, denies consumers the rewards of risk bearing, and does not recognize the impact of CWIP on the risk that consumers will bear.

DISCOUNTING

The IOUs have assumed in their analysis that utilities can earn a rate of return of 10 percent, while consumers earn a rate of return of zero. That, of course, is absurd. Although a great debate has raged over what the proper discount rate should be, the point of overwhelming importance is that it must be consistent with other assumptions in the analysis.

In a world where utilities earn 10 percent, what are consumer discount rates likely to be? The answer is that they are not likely to be very far from 10 percent. The 10 point spread between the rate of return and the discount rate that the IOUs assumed in their analysis falsely inflates the potential benefit of CWIP to consumers.

For example, the ten point spread leads to consumer costs with CWIP that are 22 percent lower over the entire 37 year life of the project (7 years of construction and 30 years of use). A five point spread leads to consumer costs that are 13 percent lower. If consumer discount rates are equal to utility rates of return, there is no benefit from CWIP. A good case can be made that consumer discount rates are at least equal to, if not higher than, utility rates of return, which would make CWIP an absolute loser from the consumer point of view even without considering risk and other factors.

The point of paramount importance, however, is that the spread could never be more than a few percentage points. With a spread of a few percentage points, the potential gains are very small. Considerations of risk and the impact of CWIP on investment behavior, or on industry structure, completely overwhelm these small possible gains and make CWIP extremely unattractive from the consumers' economic point of view.

ASSESSING RISK

As the IOUs would have it, consumers are not rewarded for bearing the risk of paying for a plant before it is used and useful. They are not given any equity interest in the facility, which is the normal market mechanism for rewarding the willingness to bear risk. In addition, the utilities have not offered to lower their rate of return when they shift risk, which is what the market would do. CWIP is a bad deal from this perspective.

In fact, the deal is worse than that. Not only will consumers be unrewarded for bearing risk, but, by shouldering more risk, they will further endanger their own economic situation. There is absolutely no doubt that the effort to impose CWIP is driven by a desire to complete more plants. In an industry with a bias toward ratebase padding, the effect of CWIP is certain to be an increase in overbuilding -- i.e. building plants that are not necessary to meet consumer needs. In the last ten years, the industry has canceled hundreds of plants. Had CWIP been in place, it would have brought many unneeded plants onto line and it can be expected to do so in the future.

Our analysis of risk shows that if CWIP even slightly raises the possibility of completing unneeded plants, or prolonging efforts to complete plants that are eventually decomissioned, consumers will lose as a result of CWIP. For example, at a consumer discount rate of 5 percent and a utility rate of return of 10 percent, which is a larger spread than actually exists, if CWIP raises the probability of completing one unneeded plant for every seven that are needed, consumers lose.

In light of the track record and nature of the industry, the rational consumer must conclude that CWIP would significantly increase the risk of overbuilding. Given any reasonable assumptions about consumer discount rates, consumers must conclude that CWIP will do them no good at all and will likely do them a great deal of economic harm.

CAPITAL COSTS AND INVESTMENT BEHAVIOR

There is yet another factor that makes CWIP unattractive from the consumer's point of view. By lowering the cost of capital intensive approaches to meeting the demand for electricity, CWIP will bias utilities against less capital intensive technologies and approaches.

All manner of small scale alternatives, up to and including insulation in people's attics, are economically preferable to consumers. They meet energy needs at lower cost, employ more labor, pose little or no threat to the environment, and provide greater security against the uncertainties of the chaotic energy market.

Analytically, what this suggests is that the risk of underbuilding is small and the reality that consumers face is likely to continue to render CWIP a bad proposition for the foreseeable future. There are decades and decades worth of other investments to be made that serve the consumer's energy needs and economic interests better than building generating capacity. There is little threat of underbuilding because these alternative investments have shorter lead times and render the energy infrastructure more flexible.

CWIP AND THE STRUCTURE OF THE UTILITY INDUSTRY

While the above factors lead to the direct economic condemnation of CWIP, there is a subtle impact of the CWIP policy before Congress that reinforces this conclusion. Because of its application at the federal level to wholesale sales, CWIP would have two disastrous side effects on industry structure.

The electric utility is a classic case of a natural monopoly. In this country we have left the bulk of ownership of utilities in the private sector, but regulated it. This provides the incentives of private property while restraining the tendency of the monopolist to exploit market power. At the same time, we have created a significant public and cooperative sector. This sector is intended to compete with the private sector in a variety of ways, in addition to providing an alternative approach to meeting the demand for electricity. The mixture of public and private enterprises provides the disciplinary factor of elements of competition in an industry where privately owned utilities would not compete with one another.

This dynamic, unique structure would be seriously damaged by CWIP in wholesale transactions. First, CWIP would squeeze publicly and cooperatively owned utilities. They would be charged CWIP by private utilities for wholesale sales, while private utilities themselves might not be. This would place them at a significant competitive disadvantage. Second, CWIP would encourage privately owned utilities to set up generation and transmission (G&T) subsidiaries specializing in wholesale transactions only. This would circumvent regulation at the state level. The power of the companies would be vastly expanded.

This effect on the economics of CWIP could be represented as an indirect reduction in the expected economic value of CWIP. Rates would be higher than the simple financial analysis of CWIP suggests because elements of the abuse of market power would enter into the ultimate price that consumers pay. This would further reduce the likelihood that CWIP would be in the consumer's economic interest.

CONCLUSION

In conclusion, it is overwhelmingly clear that a policy of allowing CWIP on anything other than a carefully circumscribed case-by-case basis is not in the consumers' economic interest. It makes no sense on the basis of the direct economic analysis of CWIP as an investment choice for the consumer. It makes no sense on the basis of an analysis of the impact of CWIP on industry structure.

I appreciate the opportunity to share the results of our analysis with you today. I would be happy to answer any questions that you may have and to work with the Committee in fashioning sound legislation to protect the consumer interest in guiding utility investment policy.

Consumer Federation of America

THE CONSUMER ECONOMICS OF CWIP:
A SHORT CIRCUIT FOR AMERICAN POCKETBOOKS

April, 1984

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INTRODUCTION

In recent months a debate over the financing of the construction of electric utility generating plants has been raging in Washington D. C. and a number of states. The issue is whether or not to allow utilities to recover from consumers the costs of financing projects under construction by including construction work in progress (CWIP) in the ratebase. State and federal policy has generally not allowed CWIP, except on a case-by-case basis where the utility could demonstrate severe financial distress.

The question that dominates most political debates is whether CWIP raises or lowers the ultimate cost to consumers. Investor owned utilities (IOUs) claim that it lowers consumer costs; consumer groups argue that it does not.

The Federal Energy Regulatory Commission (FERC), which regulates wholesale sales of electricity (i.e. sales from one utility to another for purposes of resale to ultimate consumers), recently fueled this debate when it decided to allow CWIP up to 50 percent across-the-board in those transactions. IOUs have fought a strenuous, but to date unsuccessful, battle to prevent legislation that would force the FERC to revert to its prior practice of considering CWIP on a case-by-case basis.

After passing the House of Representatives by a two-to-one margin, such legislation is moving through the Senate. The debate over the consumer impact of CWIP has only grown more intense as a result of this legislative activity.

In an effort to settle the matter decisively, The Consumer Federation of America (CFA) has conducted a thorough reanalysis of the data that the IOUs have circulated in an effort to try to prove that CWIP is proconsumer.1/ By applying the most fundamental principles of economic analysis, CFA has found that, at present and for the foreseeable future, CWIP is not in the economic interest of consumers.

This report concludes that CWIP is an unjustified effort to override and negate the marketplace. It is a forced loan from consumers to utilities that flies in the face of the signals that financial markets have been sending to the utility industry for years. Because it is such a blatant attempt to circumvent basic economics, it is readily apparent that consumers will lose as a result of CWIP because CWIP makes no sense in light of any, and all, of the following analyses:

- o application of any reasonable assumptions about the time value of money to consumers (i. e. the discount rate),
- o application of any reasonable assumptions about the economic value of risk,
- o application of any realistic assessment of the impact of the cost of capital on investment behavior,
- o application of any realistic assessment of the impact of CWIP on the structure of the utility industry.

THE TIME VALUE OF MONEY

In order to justify CWIP, the investor owned utilities have treated consumer's money as though it has no time value. "Pay a dollar today in order to avoid paying more than a dollar tomorrow," they say, "but don't ask what you might have done with that dollar if you hadn't given it to us."

Of course, any rational economic actor would ask exactly that question. If an alternative use of the dollar promised a higher economic return, that actor would prefer the alternative. CWIP circumvents the marketplace by preventing consumers from asking this basic question and conducting this fundamental economic analysis.

Such an analysis is called discounting. Although the IOU document defending CWIP claimed that it applied this principle, in truth it did not. Discounting is a straightforward accounting procedure. A rate is selected which represents the value of using a dollar in the present. The discount rate is generally expressed as a percentage and future dollars are discounted on an annual basis. Thus, if the discount rate is set at 10 percent, $1.00 of income deferred one year is said to have a present value of $.91 ($1.00/1.1 = $.909); deferred two years, it is said to have a present value of $.83 ($1.00/(1.1x1.1) =$.826).

There is a great debate over which discount rate should be used. In the IOU analysis, a discount rate of 10 percent was mentioned, although not actually applied. If one uses that discount rate to compare CWIP with no CWIP (as in Exhibit 1), one finds that consumers are not better off with CWIP. At best, at the end of 37 years, which is a period equal to the full construction period and useful life of the plant, they break even with CWIP.

For purposes of conducting a proper economic analysis, one should consider a variety of discount rates (as done in Exhibit 1 in tabular form and Exhibit 2 in graphic form). At discount rates above 10 percent consumers would have a net loss from CWIP. At discount rates lower than 10 percent, they might reap a net benefit.

The critical question is, what discount rate is applicable? The best answer is, the proper discount rate must be consistent with other assumptions in the analysis. For example, the IOUs assume that the CWIPed plant earns a return on equity of 10 percent. In a world where utilities earn 10 percent, what are consumer discount rates likely to be? The answer is that they are not likely to be very far from 10 percent. A case can be made that the consumer's personal discount rate is likely to be higher. If such a higher discount rate were applied, the bottom line would be negative from the consumer's point of view (as in Exhibit 3).2/

The point of overwhelming importance for the consumer economic analysis of CWIP is that the 10 point spread between the rate of return and the discount rate that the IOUs assumed in their analysis makes absolutely no sense. The spread could never

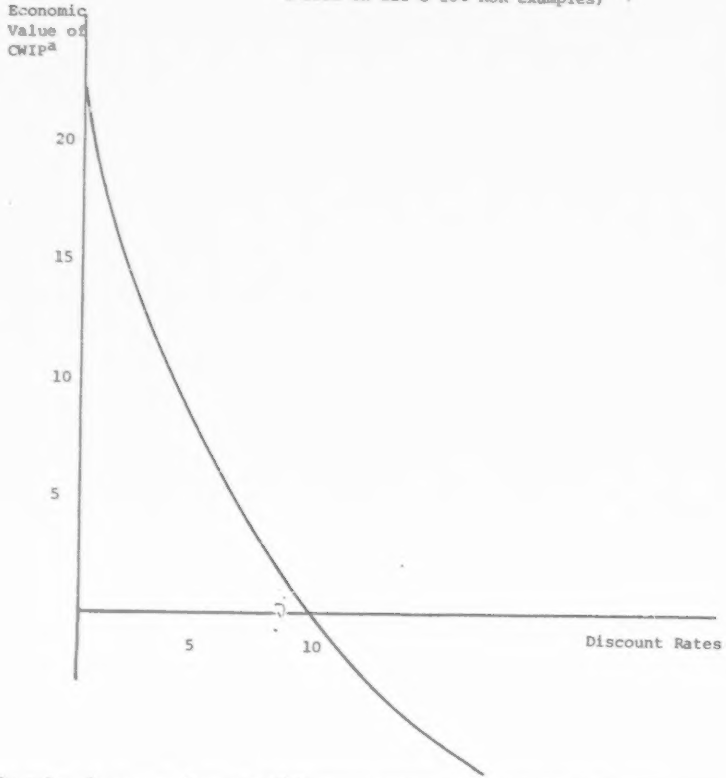
EXHIBIT 1

PRESENT VALUE COST TO CONSUMERS OF UTILITY PLANT AT VARIOUS DISCOUNT RATES AND LEVELS OF CWIP

YEAR	COST TO CONSUMERS											
	100 PERCENT CWIP						NO CWIP					
	DISCOUNT RATE (in percent)						DISCOUNT RATE (in percent)					
	0		5		10		0		5		10	
	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative
1	1	1	1	1	1	1	0	0	0	0	0	0
2	13	14	12	13	12	13	0	0	0	0	0	0
3	39	53	35	49	32	45	0	0	0	0	0	0
4	69	122	60	108	52	97	0	0	0	0	0	0
5	89	211	73	182	61	158	0	0	0	0	0	0
6	99	310	78	259	62	219	0	0	0	0	0	0
7	100	410	75	334	56	276	0	0	0	0	0	0
8	133	543	95	429	68	344	198	198	141	141	102	102
9	130	673	88	517	61	405	193	392	131	272	90	192
10	127	800	82	598	54	458	189	580	122	393	80	272
11	123	923	76	674	48	506	184	764	113	506	71	343
12	120	1043	70	744	42	548	179	942	104	611	63	405
13	117	1160	65	809	37	585	174	1116	97	707	55	461
14	113	1273	60	869	33	618	169	1285	89	797	49	510
15	110	1383	56	925	29	647	164	1448	83	879	43	553
16	106	1490	51	976	26	672	159	1607	77	956	38	591
17	103	1593	47	1023	23	695	154	1761	71	1026	34	624
18	100	1693	44	1067	20	715	149	1910	65	1091	29	654
19	97	1790	40	1107	17	723	144	2053	60	1151	26	679
20	93	1883	37	1144	15	747	139	2192	55	1206	23	702
21	90	1973	34	1178	13	760	134	2326	51	1257	20	722
22	87	2060	31	1209	12	772	129	2455	46	1303	17	739
23	83	2143	29	1238	10	782	124	2579	42	1345	15	755
24	80	2223	26	1263	9	791	119	2698	39	1384	13	768
25	77	2300	24	1287	8	799	114	2812	35	1419	12	780
26	73	2373	21	1309	7	805	109	2921	32	1452	10	789
27	70	2443	20	1329	6	812	104	3025	29	1481	9	798
28	67	2510	18	1347	5	816	99	3124	27	1507	8	806
29	63	2573	16	1363	4	821	94	3219	24	1531	7	812
30	60	2633	15	1377	4	825	89	3308	22	1553	6	818
31	57	2690	13	1390	3	828	84	3392	20	1573	5	823
32	53	2743	12	1402	3	831	79	3472	18	1590	4	827
33	50	2793	11	1413	2	833	74	3546	16	1606	4	831
34	46	2840	9	1422	2	835	69	3615	14	1620	3	834
35	43	2803	8	1430	1	837	65	3680	12	1632	3	836
36	40	2923	7	1437	1	838	60	3740	11	1643	2	838
37	37	2960	6	1443	1	840	55	3795	9	1652	2	840

EXHIBIT 2

THE RELATIONSHIP BETWEEN CONSUMER DISCOUNT RATES
AND THE ECONOMIC VALUE OF CWIP
(based on EEI's 10% ROR examples)

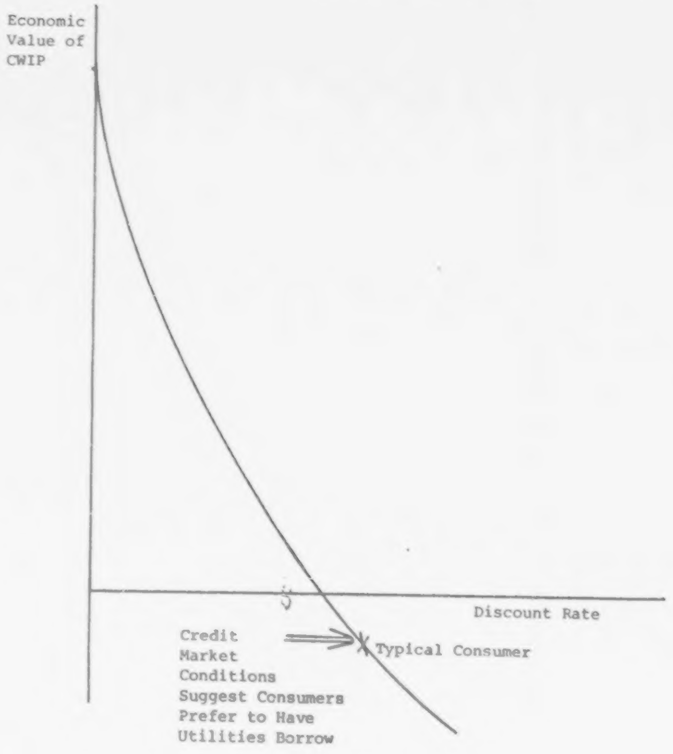


a) Economic value is measured as the difference between 100% CWIP and 0% CWIP expressed as a Percent of 0% CWIP in the cost to consumers.

EXHIBIT 3

THE TYPICAL CONSUMER POSITION WITH RESPECT TO

DISCOUNT RATES AND CWIP



be more than a few percentage points. With a spread of a few percentage points, the potential gains are very small. Considerations of risk and the impact of CWIP on investment behavior, or on industry structure, completely overwhelm these small possible gains and make make CWIP extremely unattractive from the consumers' economic point of view.

THE ECONOMIC VALUE OF RISK

It is widely recognized that CWIP is essentially a mechanism for shifting risk from stockholders to ratepayers. By asking ratepayers to pay for plants before they are used and useful, consumers are forced to bear the risk of their not being completed.

As the IOUs would have it, consumers are not rewarded for bearing that risk. They are not given any equity interest in the facility, which is the normal market mechanism for rewarding the willingness to bear risk. In addition, the utilities have not offered to lower their rate of return when they shift risk, which is what the market would do.3/ Lower risk investments invariably receive lower rates of return.

In essence, consumers are expected to bear the risk in exchange for the economic rewards of the altered financing costs. We have just seen that these benefits are negligible at best. This is simply a bad deal for consumers.

In fact, the deal is worse than that. Not only will consumers be unrewarded for bearing risk, but, by shouldering more risk, they will further endanger their own economic situation. There is absolutely no doubt that the effort to impose CWIP is driven by a desire to complete more plants. The effect of CWIP is certain to be an increase in overbuilding -- i.e. building plants that are not necessary to meet consumer needs.

The industry has a bias toward ratebase overbuilding and CWIP would only stimulate that bias.4/ In the last ten years, the industry has canceled over one-hundred plants.5/ Had CWIP been in place, it would have brought many unneeded plants onto line and it can be expected to do so in the future.

The effects of this added risk of overbuilding would be devastating on consumers. Rational economic actors must decide how to dispose of their resources on the basis of expected economic outcomes. Such an assessment shows that even small changes in the risk of overbuilding dramatically worsen the economic outlook on CWIP (see Exhibits 4 and 5 for tabular and graphic representations of this assessment).

Even if consumers have a discount rate of zero (which the IOUs erroneously assumed), any positive economic effect of CWIP would be wiped out if CWIP induced the utilities to build one unneeded plant for about every three that are needed. That is, consumers "save" $2.520 billion by CWIPing three plants (in the IOU analysis) but the fourth one would cost them $2.960 billion.

In more precise terms, if the consumers discount rate is

EXHIBIT 4

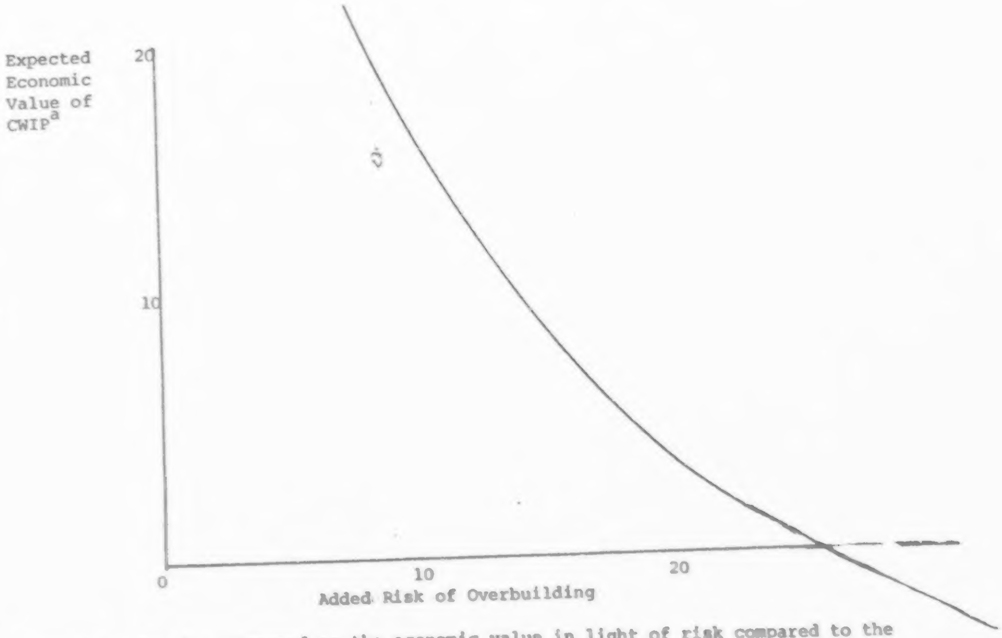
ESTIMATING THE BREAK EVEN RISK FACTORS FOR OVERBUILDING

Discount Rate	Savings Per Plant (000,000)	Real Cost of CWIP Plant (000,000)	Number of Plants Where Savings Equal One Additional Plant	Break Even Point Where Risk of Building One Additional Plant Offsets Savings From Prior Plants
0	$835	$2960	3.54	.282
5	$209	$1443	6.90	.145
10	0	$840	na	na

EXHIBIT 5

THE RELATIONSHIP BETWEEN RISK BEARING AND THE EXPECTED ECONOMIC VALUE OF CWIP

(based on EEI's 10% ROR cases)



a) Expected value is expressed as the economic value in light of risk compared to the economic value assuming no change in risk.

zero and CWIP caused one additional plant to be built for every 3.5 that are needed, consumers would be no better off with CWIP. Put another way, if CWIP raises the probability of overbuilding by 29 percent, even assuming a zero discount rate, consumers are worse off with CWIP (1/3.5=.286).

At a 5 percent discount rate, if CWIP raises the probability of overbuilding by 15 percent, consumers would be worse off. At a 10 percent discount rate, any increase in the probability of overbuilding whatsoever would leave consumers worse off.

Given the track record and nature of the industry, the rational consumer must conclude that CWIP would significantly increase the risk of overbuilding. Given the current conditions in the industry and financial markets, consumers must conclude that CWIP will do them no good at all and will likely do them a great deal of economic harm.

On the basis of considerations of the time value of money and risk, it is clear that consumers cannot expect to benefit from CWIP. Only where discount rates are low and the risk of overbuilding is low, can CWIP be expected to yield positive outcomes (see Exhibits 6 and 7 for graphic ways of representing this conclusion). In the vast majority of instances, however, CWIP will not be justified on the basis of its expected economic value. The reality that consumers face is not favorable to CWIP. The vast majority of consumers are not in a low risk, low discount situation. Given the choice on the basis of rational economic calculations, the overwhelming majority would vote

EXHIBIT 6
DISCOUNT RATES AND RISK RELATED TO CWIP
IN A CONTINGENCY TABLE APPROACH

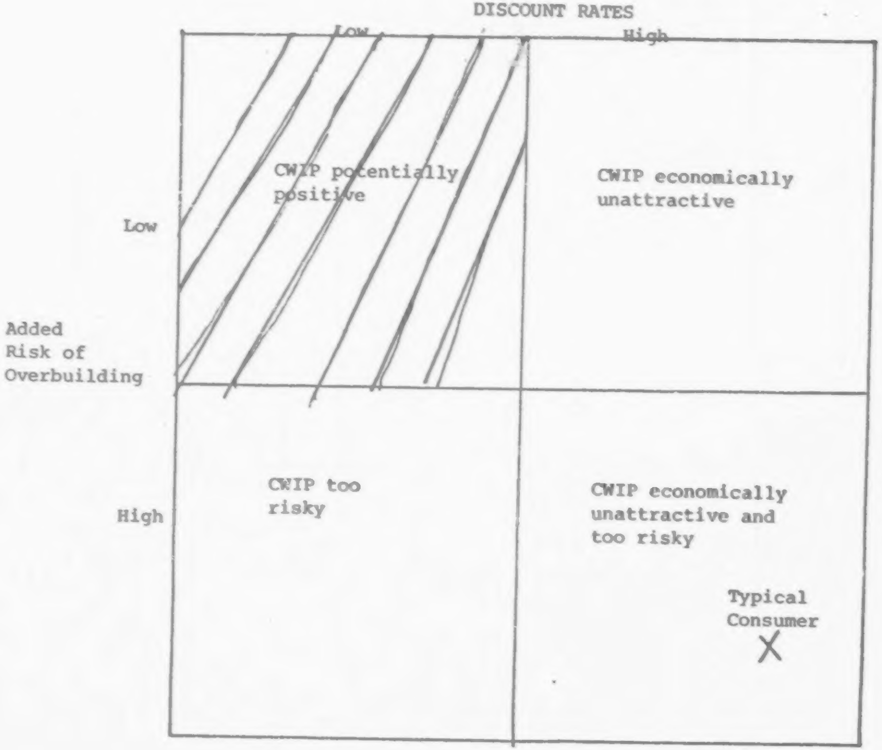
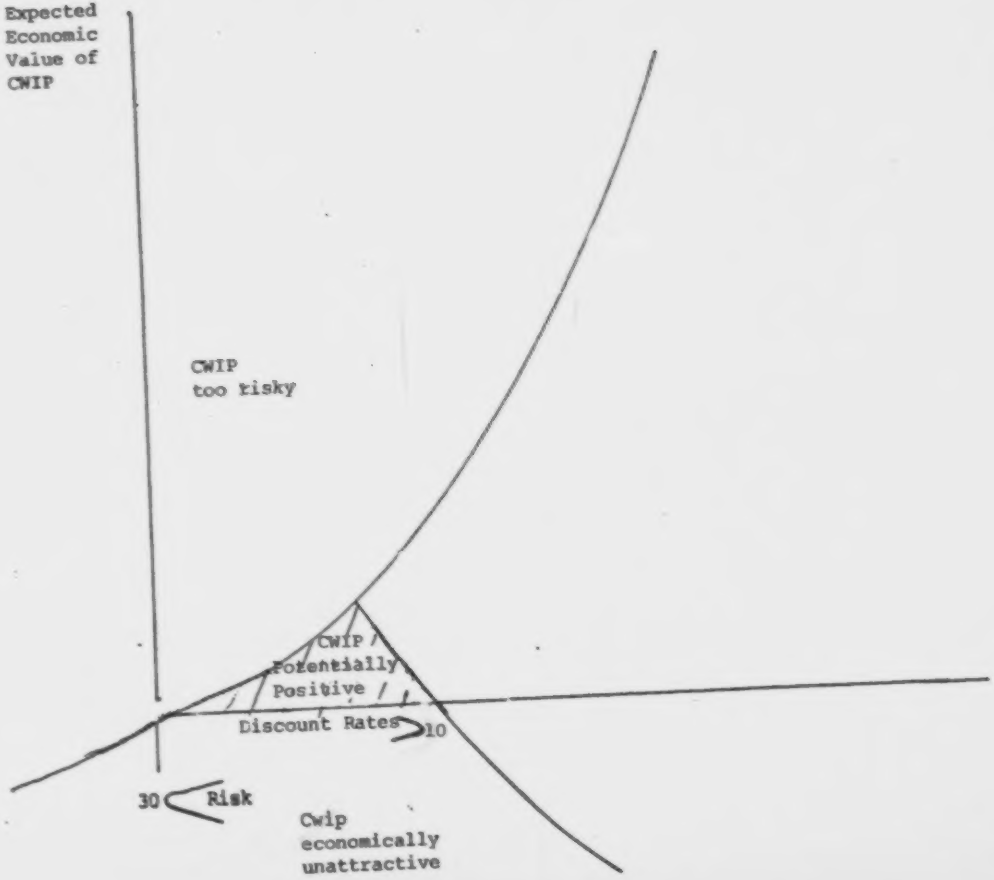

DISCOUNT RATES
Low
High
Added
Risk of
Overbuilding
Low
High
CWIP potentially
positive
CWIP economically
unattractive
CWIP too
risky
CWIP economically
unattractive and
too risky
Typical
Consumer
X

EXHIBIT 7
DISCOUNT RATES AND RISK RELATED TO CWIP IN A GRAPHIC APPROACH



against CWIP.

CAPITAL COSTS AND INVESTMENT BEHAVIOR

There is yet another factor that makes CWIP unattractive from the consumer's point of view. By lowering the cost of capital intensive approaches to meeting the demand for electricity, CWIP will bias utilities against less capital intensive technologies and approaches.6/

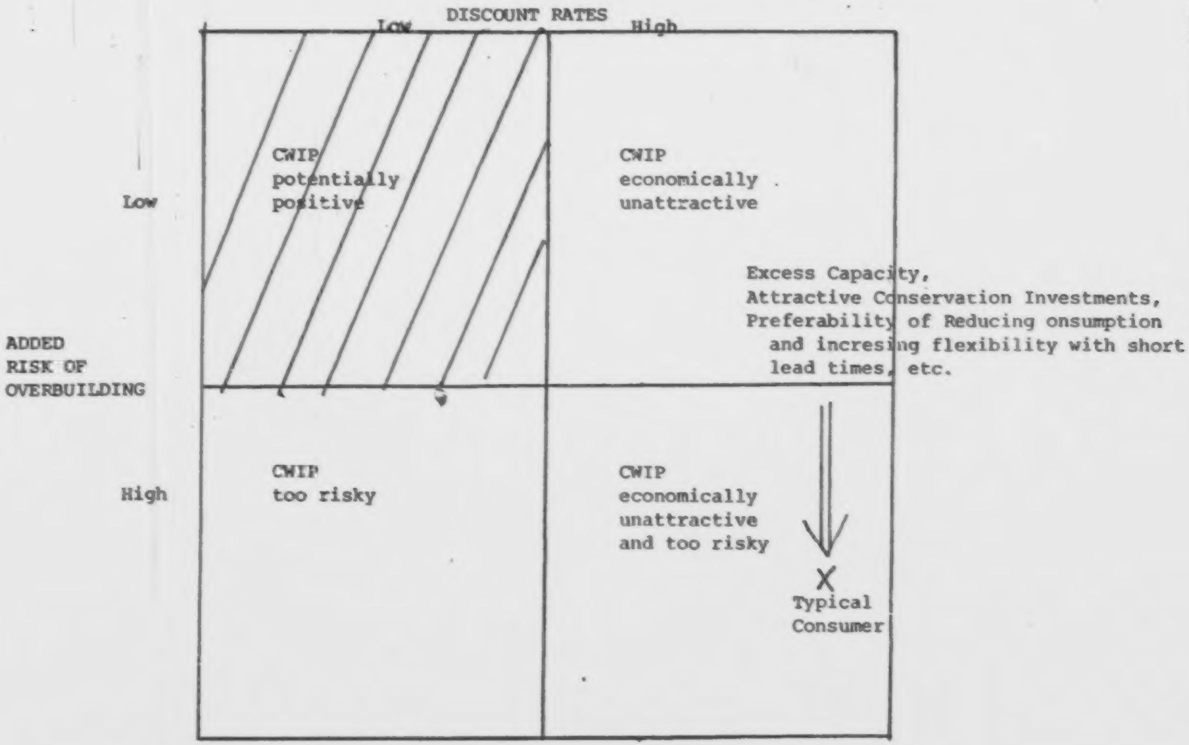
All manner of small scale alternatives, up to and including insulation in people's attics, are economically preferable to consumers.7/ They meet energy needs at lower cost, employ more labor, pose little or no threat to the environment, and provide greater security against the uncertainties of the chaotic energy market.8/

The utility industry has been one of the great laggards in recognizing that demand growth is slowing and that it can and should be slowed even further without slowing economic growth.9/ Financial markets have been telling utilities correctly to get out of the business of long term, large capital projects as much as possible. CWIP is one last gasp effort of an industry that is hooked on capital intensive technology to avoid reality.

Analytically, what this suggests is that the risk of underbuilding is small and the reality that consumers face is likely to continue to render CWIP a bad proposition for the foreseeable future (see Exhibit 8). There are decades and decades worth of other investments to be made that serve the

EXHIBIT 8

DISCOUNT RATES AND RISK RELATED TO CWIP HIGHLIGHTING FACTORS THAT KEEP FUTURE RISK HIGH


DISCOUNT RATES
Low
High
ADDED RISK OF OVERBUILDING
Low
High
CWIP potentially positive
CWIP economically unattractive
CWIP too risky
CWIP economically unattractive and too risky
X
Typical Consumer

Excess Capacity,
Attractive Conservation Investments,
Preferability of Reducing onsumption
and incresing flexibility with short
lead times, etc.

consumer's energy needs and economic interests better than building generating capacity. There is little threat of underbuilding because these alternative investments have shorter lead times and render the energy infrastructure more flexible.

THE CONSUMER'S OVERALL DIRECT ECONOMIC VIEW OF CWIP

These three basic economic factors render CWIP a disastrous prospect from the consumer point of view. CWIP is worse than an uneconomic, high risk investment because consumers are not even offered the potential benefits of that investment. Even if utilities offered to lower their rate of return by several percentage points in exchange for CWIP (see Exhibits 9 and 10), consumers would still conclude that CWIP is not in their interest.10/ The current situation in the industry and the reality that is likely to obtain for several decades are completely hostile to CWIP from the consumer point of view.

CWIP AND THE STRUCTURE OF THE UTILITY INDUSTRY

While the above three factors lead to the direct economic condemnation of CWIP, there is a subtle impact of the CWIP policy before Congress that reinforces this conclusion. Because of its application at the federal level to wholesale sales, CWIP would have two disastrous side effects on industry structure.

The electric utility industry is a classic example of a natural monopoly.11/ Throughout the industrialized world and since the beginning of the industry this characteristic has been

EXHIBIT 9

THE EFFECTS OF REDUCING THE RATE OF RETURN TO REWARD CONSUMERS FOR BEARING RISK STILL DO NOT MAKE CWIP AN ATTRACTIVE ECONOMIC OPTION

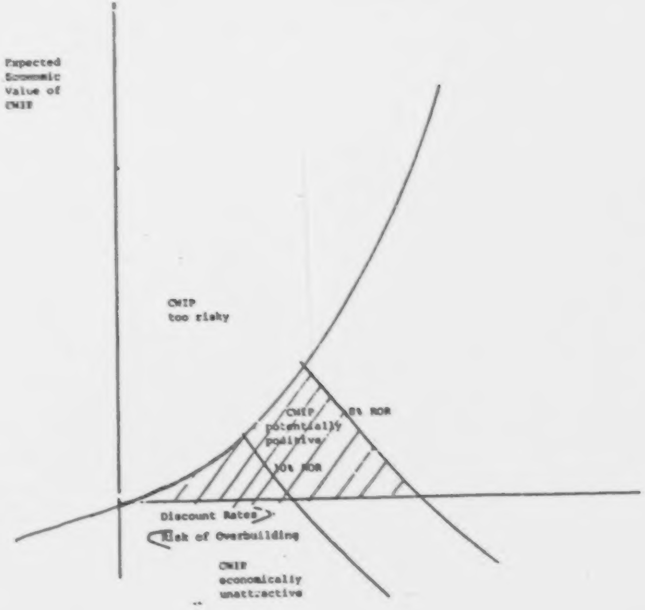
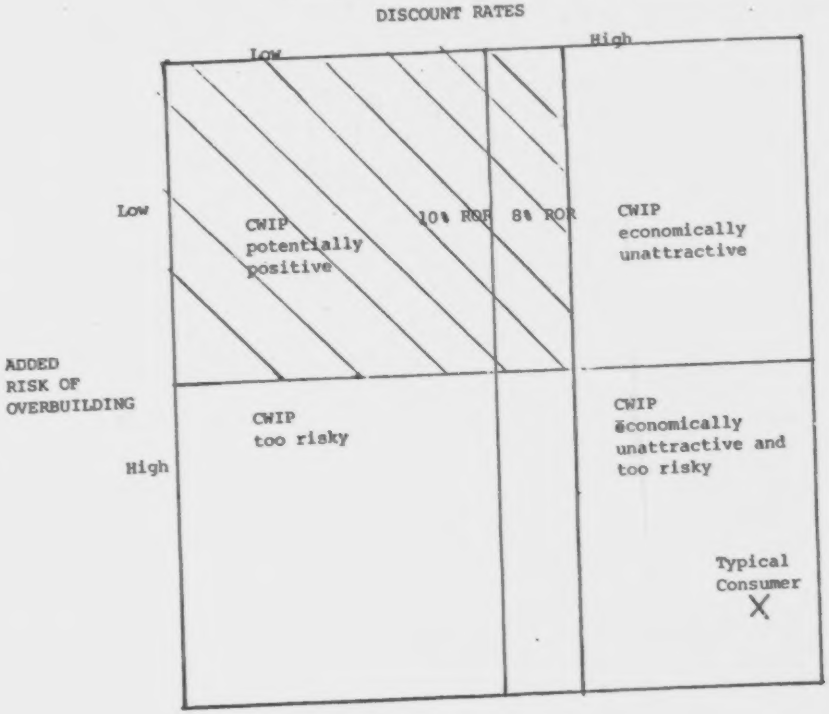


EXHIBIT 10

REDUCING THE RATE OF RETURN TO REWARD CONSUMERS FOR BEARING RISK STILL DOES NOT MAKE CWIP AN ATTRACTIVE ECONOMIC OPTION


DISCOUNT RATES
Low
High
ADDED RISK OF OVERBUILDING
Low
High
CWIP potentially positive
10% ROR
8% ROR
CWIP economically unattractive
CWIP too risky
CWIP economically unattractive and too risky
Typical Consumer
X

widely recognized. In most nations, the industry is nationalized. In the United States we have chosen a unique path to dealing with the monopolistic character of the industry.

By and large, we have left the ownership of utilities in the private sector, but regulated it. This provides the incentives of private property while restraining the tendency of the monopolist to exploit market power.12/ At the same time, we have created a significant public and cooperative sector. This sector is intended to compete with the private sector in a variety of ways, in addition to providing an alternative approach to meeting the demand for electricity. The mixture of public and private enterprises provides the disciplinary factor of competition in an industry where privately owned utilities would not compete with one another.13/

This dynamic, unique structure would be seriously damaged by CWIP. First, CWIP would squeeze publicly and cooperatively owned utilities. They would be charged CWIP by private utilities for wholesale sales, while private utilities themselves might not be. This would place them at a significant competitive disadvantage. Second, CWIP would encourage privately owned utilities to set up generation and transmission (G&T) subsidiaries specializing in wholesale transactions only. This would circumvent regulation at the state level. The power of the companies would be vastly expanded.

Thus, CWIP is a lever for the natural monopolist to escape the two sets of forces that are intended to restrain the abuse of market power in the uniquely American approach to the utility industry. One can easily envision the careful monopolist CWIPing the public and cooperative sectors to death in those jurisdictions where they are serious competitors, while circumventing regulation with G&T subsidiaries in jurisdictions where there is no such threat.

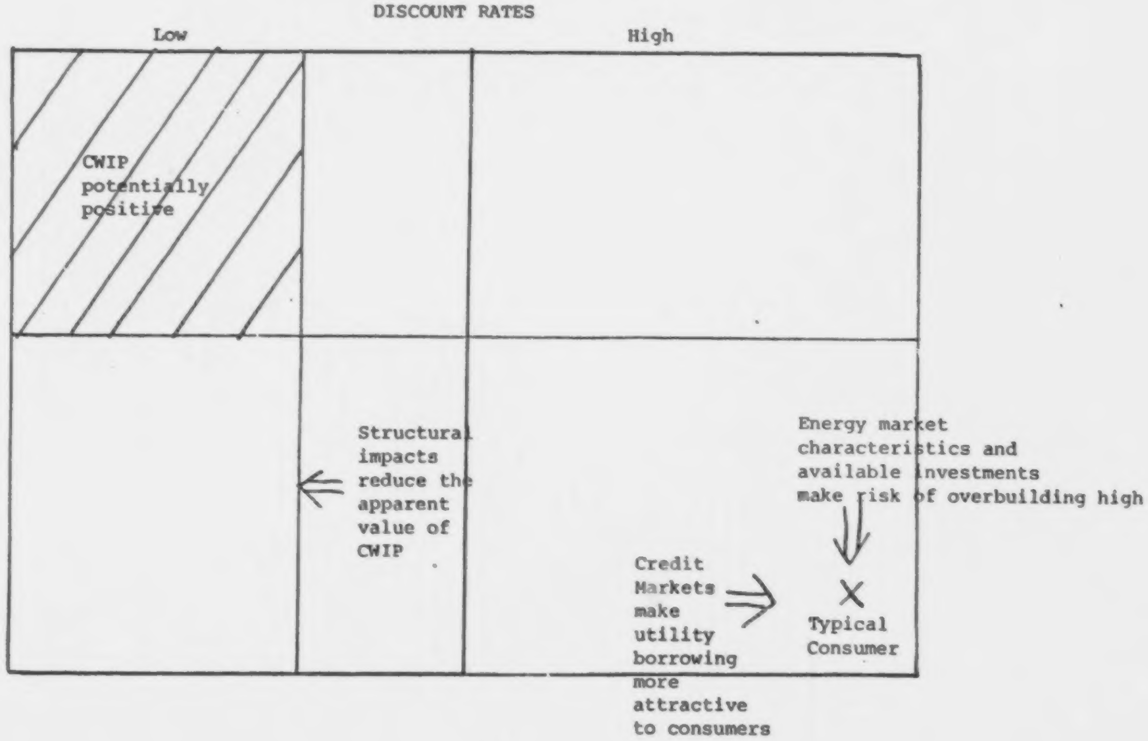
This effect on the economics of CWIP could be represented as an indirect reduction in the expected economic value of CWIP (see Exhibit 11). Rates would be higher than the simple financial analysis of CWIP suggests because elements of the abuse of market power would enter into price. It would further reduce the likelihood that CWIP would be in the consumer's economic interest.

CONCLUSION

In conclusion, it is overwhelmingly clear that a policy of allowing CWIP on anything other than a carefully circumscribed case-by-case basis is not in the consumers economic interest. It makes no sense on the basis of the direct economic analysis of CWIP as an investment choice for the consumer. It makes no sense on the basis of an analysis of the impact of CWIP on industry structure.

EXHIBIT 11

CWIP IS AN UNACCEPTABLE ECONOMIC INVESTMENT FOR CONSUMERS WHEN ASSESSED IN TERMS OF THE ECONOMIC VALUE IT CREATES, THE RISK IT ENTAILS AND THE IMPACT THAT IT WOULD HAVE ON INDUSTRY STRUCTURE


DISCOUNT RATES
Low
High
CWIP potentially positive
Structural impacts reduce the apparent value of CWIP
Energy market characteristics and available investments make risk of overbuilding high
Credit Markets make utility borrowing more attractive to consumers
X
Typical Consumer

FOOTNOTES

1. Edison Electric Institute, Fact Sheet on H. R. 555 (Washington, D. C., No Date). The fact sheet was sent to members of the House of Representatives on or about September 16, 1983.

2. The consumer discount rate is likely to be higher because, by and large, the average consumer is more likely to be a net borrower than a net lender. The discount rate they would be forced to apply to a dollar given to the company would be closer to their opportunity cost of debt than to the opportunity cost of capital. The average cost of consumer debt is likely to be higher than the average cost of utility capital. Long term mortgages cost more than long term utility bonds. Short term consumer debt costs more than short term commercial credit. A most interesting discussion of the choice of discount rate from this perspective can be found in National Bureau of Standards, Optimal Weatherization (Washington, D.C., 1980), Appendix C.

3. The CWIP and No CWIP financial analyses utilize the same rate of return.

4. Through the mid-1970s the empirical tests strongly supported the conclusion that electric utilities tended to overuse capital (the so called A-J effect). Alternative approaches and respecifications have cast some doubt on the original formulation. However, the alternative specifications, particularly with respect to the nuclear power industry, which is the central factor in the drive for CWIP, do not contradict this basic assertion. For thorough review discussions, see Paul L. Joskow and Roger G. Noll, "Regulation in Theory and Practice: An Overview," in Gary Fromm (Ed.), Studies in Public Regualtion (Cambridge, Massachusetts: MIT Press, 1981) and Richard Schmalensee, The Control of Natural Monopolies (Cambridge, Massachusetts: Lexington Books, 1979).

5. Representative Harkin points out that while over 100 plants have been canceled since 1975, demand has fallen short of the 1973 projection by the equivalent of almost 150 plants (Subcommittee on Energy Conservation and Power, Committee on Energy and Commerce, United States House of Representative, CWIP Policy Act of 1983, April 28, 1983, p. 25). The result has been a rapid and large build up of reserve capacity.

6. Utilities will prefer those investments that can be CWIPed. Similarly, utility investments that can be CWIPed will have an advantage over nonutility investments that cannot.

7. The most comprehensive discussion of the relative economics can be found in The Solar Energy Research Institute, A

New Prosperity: Building a Sustainable Energy Future (Andover, Massachusetts: Brick House Publishing, 1981). A direct rebuttal of the argument that massive quantities of new plant are needed can be found in the statement and submission of Alvin Kaufman, Senior Specialist, Congressional Research Service, before the Subcommittee on Energy Conservation and Power... April 28, 1983.

8. An examination of the cost and labor intensity of alternatives can be found in Dr. Mark N. Cooper, "Energy Policy and Jobs: The Conservation Path to Fuller Employment," presented to The Industrial Union Department, AFL-CIO, Conference on Energy and Jobs, Washington, D. C., May 5, 1980. The security aspect of alternatives has been documented in The Energy Defense Project, Energy, Vulnerability and War: Dispersed, Decentralized and Renewable Energy Sources (Washington, D.C.: Federal Emergency Management Agency, 1980). The economic and energy benefits of alternatives have been widely recognized.

9. During the past decade, the industry consistently overestimated demand growth and failed to trim construction programs, which has created not only the huge build up of reserve margins, but a massive nuclear overhang. Reserve margins are presently higher than at any time since the 1930s. Only wildly optimistic projections of demand growth and pessimistic projections of the financial health of the industry, coupled with ignorance of the available alternatives, can lead one to believe that the industry will be unable to finance any necessary construction of plants in the normal fashion.

10. This analysis, which is tantamount to lowering the overall cost of money for the utility,shows that this highly touted benefit of CWIP is rather feeble given the current conditions in the industry.

11. See Schmalensee, The Control..., for a discussion. A debate has recently raged over the potential for decontrol of the industry in light of the development of points of possible competition. The conditions for a natural monopoly in much of the industry persist (see Paul Joskow and Richard Schmalensee, Markets for Power: An Analysis of Electric Utility Deregulation (Cambridge, Massachusetts: MIT Press, 1983).

12. Ultimately, the issue of how much protection is necessary turns on what one thinks of the status of the natural monopoly and the need for regulation of monopolies in general. There has been an intense debate in just about every regulated industry over the exact nature and conditions under which natural monopolies exist.

It is clear that with the increasing density of traffic and the completion of a national network, the possibility for deregulating parts of formerly natural monopolies increases. William G. Shepherd, "Regulation, Entry and Public Enterprise," in William G. Shepherd and Thomas G. Gies (eds.), Regulation in Further Perspective: The Little Engine That Might (Cambridge, Massachusetts: Ballinger, 1974) has outlined a scheme of the phases through which industries progress. Nevertheless, the persistence of significant elements of market power and natural monopoly conditions in the electric utility industry is clear.

In the current deregulation environment it is all too easy to forget, downplay, or underestimate the damage that the abuse of market power can inflict. As Harry M. Trebing put it ("The Chicago School Versus Public Utility Regulation," Journal of Economic Issues, 10 (1976) p. 118):

> First, the effects of unregulated private monopoly on resource allocation, efficiency, innovation, and income distribution should not be minimized despite efforts to deprecate net losses due to allocative and "x" efficiencies [of regulation]. In the real world, the private monopolist's strategies to maintain a position of dominance through price discrimination, cross-subsidization, entry foreclosure, and political favoritism will set the stage for all of the distortions associated with monopoly power. In addition, such actions are conducive to a redistribution of income from consumers to the monopolist that may become socially and politically intolerable.

Although the evils of monopoly to which Trebing refers are well known, they receive little attention in current economic discussion. To briefly restate the basic concerns:

Monopolists misallocate resources. Whereas competitive markets cause just the right quantities of supplies to be produced at the lowest cost possible and sold at a price that reflects the social value of those supplies, monopolists produce less than would be supplied in a competitive market in order to raise prices. By increasing prices they rob society of goods or services that society values more than the competitive cost of producing those goods and services. They also cause transfers of wealth from consumers of the commodity to the monopolist producers.

Exhibit 12 describes a competitive market in terms of welfare economics and Exhibit 13 describes a monopolistic market in similar terms. Total surplus is defined as the difference

EXHIBIT 12

COMPETITIVE PRICES AND
ECONOMIC SURPLUS

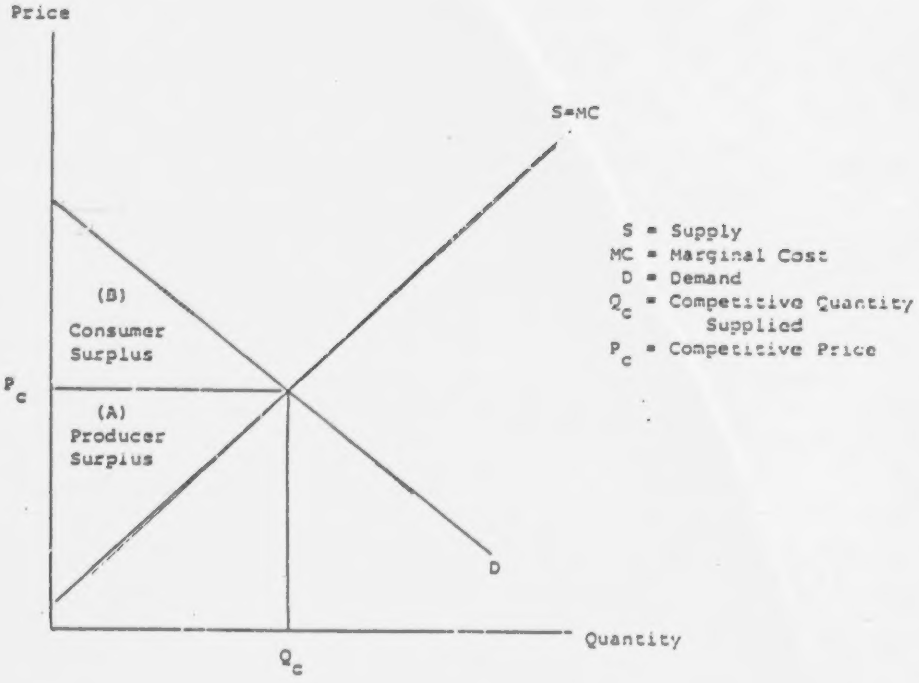
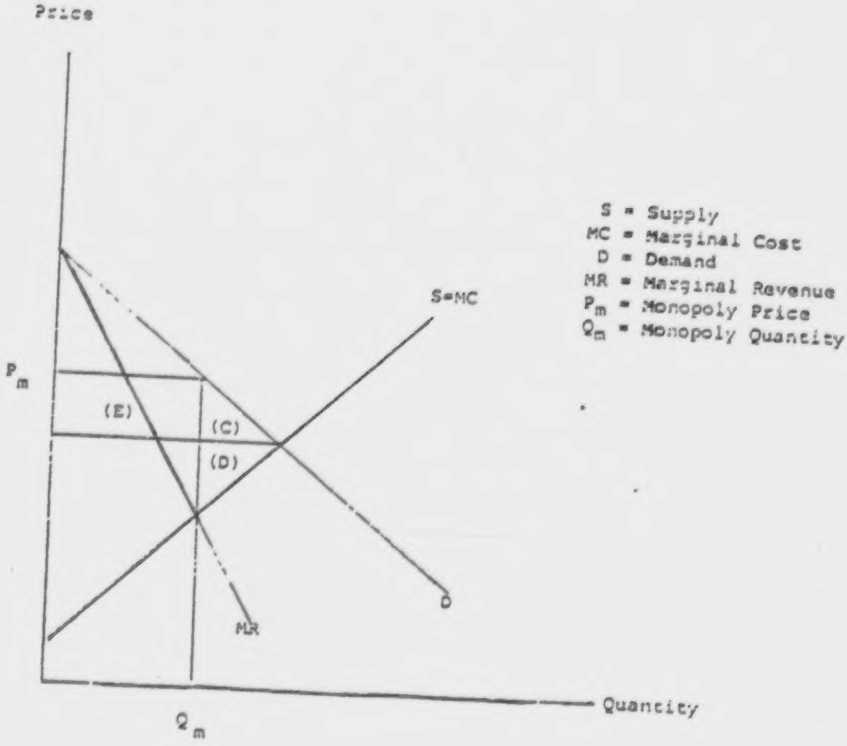


EXHIBIT 13

MONOPOLY PRICES AND
ECONOMIC SURPLUS


Price
P m
(E)
(C)
(D)
S=MC
D
MR
Q m
Quantity
S = Supply
MC = Marginal Cost
D = Demand
MR = Marginal Revenue
P m = Monopoly Price
Q m = Monopoly Quantity

between the cost of producing a commodity, measured by the height of the supply curve, and the value of consuming the commodity, measured by the height of the demand curve. Every point on the supply curve is taken to represent the real costs (including normal profits) of delivering a specific quantity of a commodity under conditions of competition. Similarly, the height of the demand curve represents the value of the commodity delivered in that quantity because that is what consumers are willing to pay for it. The notion of surplus arises because the competitive process drives output to exactly the equilibrium point where the costs of production just equal the value of consumption of the last unit. Since all units are sold at a uniform price (i.e., price discrimination does not exist), some of the units of the commodity have been sold at a price above what they cost to produce and producers gain a surplus (measured as area A in Exhibit 12). Similarly, some of the units of the commodity are consumed at a price below what consumers would have been willing to pay and they reap a surplus (area B in Exhibit 12.)

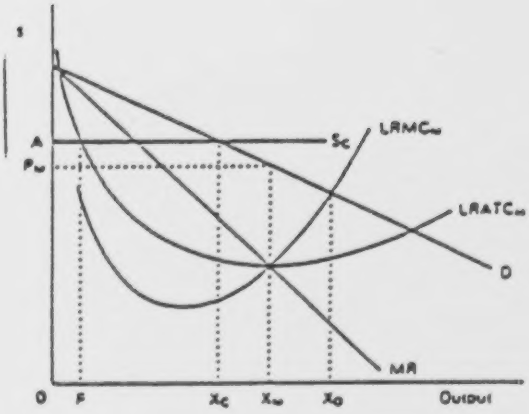
Monopolists distort this picture. They endeavor to restrict supply by selling at a price that equates marginal revenue and marginal costs. In so doing, they reduce total economic surplus (by areas C plus D in Exhibit 13). They increase their surplus (by an amount equal to area E minus area D). They reduce consumer surplus (by an amount equal to area E plus C). Note that monopoly pricing makes sense for producers only where area C is larger than area E (i.e., when sales do not fall off too rapidly).

The picture changes slightly for the case of natural monopolies (see Exhibit 14). Where costs are falling over some range, one supplier achieving economies of scale can deliver the goods at a lower cost than two or more competitors. Nevertheless, the role for regulation is clear; although the monopolist may better meet society's needs than would competitors, a profit maximizing monopolist will not do as good a job as a monopolist forced to maximize social welfare. F. M. Sherer (Industrial Market Structure and Economic Performance (Chicago: McNally, 1970) p.20) provides the following text to accompany Exhibit 14):

> A second assault on the economist's conventional wisdom holds that only through monopoly can firms be large enough to realize economies of scale. Under monopolistic (oligopolistic) organization of an industry, then, costs are lower than they would be if the industry includes many small-scale producers. The consequences are illustrated in [Exhibit 13]. A

EXHIBIT 14

Monopoly with Scale Economies



> monopolist's long-run average total cost curve is assumed to be LRATCm, with associated marginal costs LRMCm. If on the other hand, the industry were atomistically structured, with each member firm operating a plant designed to produced OF units of output at a unit cost of OA, the long run supply curve would be ASc. Given these assumptions, the profit maximizing monopolist produces OXm, which is higher than the competitive supply OXc. Clearly, it cannot be said that consumer demands are satisfied less fully under monopoly in this case than they would be under competition (although resource allocation could still be better if the monopolist could be induced to expand production to OXo, where marginal cost is equal to price). By realizing scale economies, the monopolist also conserves resources which inefficiently small competitive firms would require, and which have worthwhile alternative uses elsewhere in the economy. Nevertheless, the conclusion drawn here depends entirely upon the shapes assumed for the monopoly and competitive cost curves. Whether monopolists in fact enjoy such a decided cost advantage (or indeed any at all) is an empirical question.

Economic theory has become much more complex than this basic description with major thrusts into the issue of sustainability of prices and second best pricing rules that maximize social welfare. However, the basic concept remains applicable, no matter how mystified it may become in complex mathematics.

13. A lively discussion of the emergence of the industry, with an emphasis on the development of the public sector and its benefits can be found in Richard Hellman, Competition in the Electric Power Industry (New York: Praeger, 1972).

Senator CHAFEE. Thank you very much, Dr. Cooper.
Ms. Campbell, Coalition for Consumer Justice.

STATEMENT OF FRANCIS CAMPBELL, EXECUTIVE BOARD MEMBER, COALITION FOR CONSUMER JUSTICE

Ms. CAMPBELL. I am a member of many senior groups, and I am speaking sort of for the seniors of Rhode Island in this issue.

For 9 years, CCJ has been involved with various State and Federal utility issues, such as rate structures, affordability, winter shut-off policies, and alternative power sources.

We have a paid membership of 9,000 people; 60 percent of whom are senior citizens, and also have a long history of working for the consumer who is hard pressed to deal with the changing policies of business and government.

I speak today for the CCJ board of directors, and also as a senior citizen who is now being told by the FERC that I must invest more of my limited money into whatever projects my electric company may come up with even before these projects are finished.

But worst of all, FERC is now telling me that it doesn't even want to review these projects or subject them to any kind of needs test or cost-benefit analysis.

We disagree with such a FERC policy for several reasons, but most of all because we simply don't think it's fair to take our—the public's—money for investment projects that are private in every sense, except for rate accountability to the public.

FERC, however, wants to end even this accountability by giving away our money as soon as any project, no matter how brilliant or foolish—is decided upon by the same utility officials who have given us a whole generation of nuclear white elephants and the kind of cost overruns that only public money seems able to generate.

But since FERC won't listen, I am asking you as representatives of your constituents to pass S. 1069, and, thus, not allow our money to be given away up froht with no questions asked.

If food is to be taken off our tables by Government edict for something that we may never use—that is, if a customer moves, if a customer dies, if the plant is cancelled—we at least want to know that the Government will require some proof of financial need by the utility, a cost-benefit analysis, proof of need for the project as proposed, and proof that private financing is available.

CCJ has objected for almost 10 years to the types of solutions to energy problems chosen by the electrical industry, and we continue to believe that smaller, less capital-intensive projects can meet our energy needs without the kinds of risks that are now being brought up by some utilities. And these utilities are really being brought to their knees.

We view this provision of easy money by FERC as an unnecessary incentive for utilities to further involve themselves in highly capital-intensive projects when they should instead be using the respite of excess capacity to fund more research and development of other energy sources.

We believe private money is available to the electrical industry, because the electric industry was rated by Standard & Poor's as having one of the country's highest rates of return on common equity in 1982, ahead of banks, conglomerates, and nonbank financial, and needs no special privileges in order to attract money for good projects.

By eliminating public accountability tests, however, FERC is in fact interfering with the natural relationship between the utilities and their traditional money markets in favor of pushing consumers 'money up front.

As a spokesperson for senior citizens, we find this particularly unfair, because we are being told by FERC to act as captive investors in products that many of us will never live to see, either due to plant cancellation, death, and so forth.

We believe that such involuntary investments may be necessary in certain cases, but if the investment is to be up front, then we at least expect our brokers—the industry—to answer a few tough questions to our Government representatives, or FERC.

Make no mistake, senior citizens understand what is at stake here and we don't like it. We are more than willing to pay for needed plants upon completion and we believe that increased savings from good projects will usually offset increased costs immediately. If not, then increased costs can then be phased into our rates gradually, as some utilities are already planning to do.

Again, if senior citizens are to be forced by Government to put our money up front in projects we haven't chosen, then we certainly expect Government to examine these projects rigorously and with strict standards. Otherwise, the process merely becomes a corporate give-away program which adds substance to the phrase "welfare for the rich" without even a needs test.

Please pass S. 1069. Thank you.

[The prepared statement of Ms. Campbell follows:]

CCJ

Coalition for Consumer Justice
725 Branch Avenue, Providence, R.I. 02904
(401) 521-1300

TESTIMONY
of
Frances Campbell
Member of CCJ Board of Directors
regarding
S 1069
"Construction Work in Progress Policy Act"
Before the Subcommittee on Energy Regulation of the
Senate Committee on Energy and Natural Resources.
~~April 12~~, 1984
May 18,

My name is Fran Campbell. I am a member of the Board of Directors of the Coalition for Consumer Justice (CCJ) which is a citizens' watchdog group in Rhode Island and am also President of the St. Joseph's Senior Club, a member of the State Retirement Board, a member of the Executive Board of the Visiting Nurses of Blackstone Valley, Vice-President of the Pawtucket Council of Senior Citizens Clubs, a member of the state and executive boards of the Mathieu Center, and a member of the Executive Boards of both the Rhode Island Teachers' Association and the Blackstone Valley Teachers' Association. For nine years CCJ has been involved with various state and federal utility issues, such as rate structures, affordability, winter shutoff policies, and alternative power sources. We have a paid membership of 9,000, 60% of whom are senior citizens and also have a long history of working for the consumer who is hard pressed to deal with the changing policies of business and government.

I speak today for the CCJ Board of Directors and also as a senior citizen who is now being told by the Federal Energy Regulatory Commission (FERC) that I must invest more of my limited money into whatever projects my electric company may come up with before these projects are even finished. But worst of all, FERC is now telling me that it doesn't even want to review these projects or subject them to any kind of needs test or cost/benefit analysis.

We disagree with such a FERC policy for several reasons, but most of all because we simply don't think it's fair to take our, the public's, money for investment projects that are private in every sense except for rate accountability to the public. FERC, however, wants to end even this accountability by giving away our money as soon as any project, no matter how brilliant or foolish, is decided upon by the same utility officials who have given us a whole generation of nuclear white elephants and the kind of cost overruns that only public money seems able to generate.

But since FERC won't listen, I am asking you as representatives of your constituents to pass S 1069 and thus not allow my money to be given away up front with no questions asked. If food is to be taken off our tables by government edict for something that we may never use, e. g. if a customer moves, if a customer dies, if the plant is cancelled, we at least want to know that the government will require some proof of financial need by the utility, a cost/benefit analysis, proof of need for the project as proposed, and proof that private financing is unavailable.

We at CCJ are well aware that FERC was created as an answer to the problem that unregulated monopolies in general, and utilities in particular, can set policies without regard to market forces and thus can hold the public virtually hostage, particularly if the product is a necessity of life. Our board of directors wishes to send a message to Congress that we believe FERC is trying to abdicate its role as a rigorous substitute for competition and instead is becoming an unquestioning rubberstamp for utility projects. In view of this, CCJ asks on behalf of the people of Rhode Island that Congress establish stringent case-by-case standards that FERC must enforce as proposed by S 1069.

CCJ is concerned that current FERC rules will act as a greenlight for utility companies to take easy public money when private funds are available particularly to those utilities that haven't dug themselves into a hole with excess construction. Since there is a very limited need for new construction in light of the existing 37% of excess capacity and since the electric industry as a whole is quite healthy according to Standard & Poor's, we believe that money is available from the private sector if a construction project passes the rigorous tests of need and thus of profitability. If the private sector won't provide the money, then there are proven doubts about that particular project that we believe must be addressed before FERC gives away the public's money up front.

CCJ has objected for almost ten years to the types of solutions to energy problems chosen by the electric industry and we continue to believe that smaller, less capital-intensive projects can meet our energy needs without the kinds of risks that are now bringing some utilities to their knees. We view the provision of "easy money" by FERC as an unnecessary incentive for utilities to further involve themselves in highly capital-intensive projects when they should instead be using the respite of excess capacity to fund more research and development of other energy sources.

The research and development of fluidized-bed coal plants here, for example, should certainly be a priority considering its record as an efficient and extremely clean energy source in West Germany. Projects that are needed, safe, innovative and forward-looking will probably pass all tests required by private money sources and, if not, then public money can be sought as a last resort through S 1069.

We believe private money is available to the electric industry because the electric industry was rated by Standard & Poor's as having one of the country's highest rates of return on common equity in 1982 (ahead of banks, conglomerates, and non-bank financial) and needs no special privileges in order to attract money for good projects. By eliminating public accountability tests, however, FERC is in fact interfering with the natural relationship between the utilities and their traditional money markets in favor of pushing consumers' money up front.

As a spokesperson for senior citizens we find this particularly unfair because we are being told by FERC to act as captive investors in products that many of us will never live to see, either due to plant cancellation or death. We believe that such involuntary investments may be necessary in certain cases, but if the investment is to be up front, then we at least expect our "brokers", the industry, to answer a few tough questions to our government representatives, FERC.

We also believe that as customers we are in fact better predictors of our electric costs and needs than are the "experts", none of whom told us to tighten our belts until after disaster hit last decade. In response we tightened our belts far more than predictedby the "experts" who continued to call for more plant construction when investment diversification was in fact needed. We've been doing our part as senior citizens. However, we object when our electric company misread the situation, invested in too much plant capacity and then told the Rhode Island Public Utilities Commission that they have to raise our rates because we're not using enough electricity. This is exactly what Narragansett Electric, a subsidiary of New England Electric System, did last year and now we learn that FERC wants to give the wholesalers more of our money for investments with no questions asked.

Similarly, Eastern Utilities Associates has come to FERC and thus to me in search of "easy money" for plant investments that have again turned out to be misguided. I and over a hundred of my fellow Blackstone Valley Electric customers went to a FERC hearing in Central Falls in 1983 and told a FERC Commissioner that CWIP was undeserved in that case and should not be granted. Apparently, FERC no longer wants to consider merit and instead wants to grant CWIP to whomever requests it whenever requested. If FERC wants the monopolies to be unregulated, why doesn't it just come out and say so instead of just gradually outlawing its own power to regulate? This is particularly dangerous in light of the new NRC study which documents a strong pattern of both mismanagement of major construction projects by utility companies and also failure by the NRC to adequately review these projects when proposed. Please inspect the newspaper clipping attached to your testimony copies for more details. This is no time for FERC to relax its regulations.

Make no mistake - senior citizens understand what is at stake here and we don't like it. We are more than willing to pay for needed plants upon completion and we believe that increased savings from good projects will usually offset increased costs immediately. If not, then increased costs can then be phased into our rates gradually, as some utilities are already planning to do.

Again, if senior citizens are to be forced by government to put our money up front in projects we haven't chosen, then we certainly expect government to examine these projects rigorously and with strict standards. Otherwise, the process merely becomes a corporate giveaway program which adds substance to the phrase "welfare for the rich" without even a needs test. Please pass S 1069.

April 10,
1983

Providence
Journal

Singing, scolding, the grass roots speak out on CWIP

By DOUG CUMMING
Journal-Bulletin Staff Writer

CENTRAL FALLS — A bureaucrat with a beard, bowtie and soft Missouri accent came from Washington to Central Falls last night to listen to a breed of people he's not accustomed to — old, young, angry, mischievous, well-organized, individualistic citizens.

Opening a three-day regional hearing before the Federal Energy Regulatory Commission (FERC) on Montaup Electric's request to increase annual revenues by $14.7 million, Administrative Law Judge Joseph R. Nacy got a real taste of New England and, in particular, Central Falls.

It was the first time since 1981 that a FERC hearing had come to Rhode Island, even though FERC regulates the wholesale power that makes up about 80 percent of Rhode Island's rates. It was Nacy's first hearing outside Washington, where they usually are held.

The speakers were consistently against the request, and mostly angry over the request for $2.7 million for Pilgrim II, a nuclear plant that has been canceled, and for $4.2 million for Seabrook I and II and Millstone III, nuclear plants under construction. (The latter request is known as CWIP, or money for construction work in progress.)

Nacy heard over and over the complaint that Lillian Maynard expressed this way: "I can't help feeling that I'm encouraging bad investments by reimbursing Montaup for its Pilgrim II mistake and by giving Montaup an interest-free loan to build three lemons."

He heard Kevin Campbell, president of the Coalition for Consumer Justice, say that it was high time regulators who live in "suburban Supplyside, Va." leave their bureaucratic ivory towers.

He heard antinuclear activist William M. Smith III decry the dangers of weapons proliferation and core meltdown in nuclear power plants, and boast of the success of his 14-foot windmill in Jamestown.

Nacy — "not Nancy, please" — continued to call on speakers, who would come to the front of the hot, packed auditorium in the Public Library on Central Street. (About 70 attended, including about 10 officials of the utilities who remained silent most of the night.)

Every sort of customer spoke out against the rate request, even people who usually aren't on each other's side. Officials of Cadillac Textiles and Concordia Manufacturing. Henry Shelton of the George A. Willey Center, who called for a municipal buyout of Blackstone Valley Electric, the local retailer for Montaup. Messengers from Sen. John Chafee and Rep. Fernand J. St Germain.

But Nacy remained straight-faced and said little. His biggest reaction to the more than three hours of local color and anger came after a woman from the Mobilization for Survival led audience in a singalong that began "We must stop Montaup Electric," to the tune of "Glory Glory Hallelujah," with the stenographer taking down every word.

"I have to listen to three days of this?" Nacy quipped softly.

The hearing, settling down to more technical aspects of the case, continues today and tomorrow at 10 a.m., 1:30 p.m. and 7 p.m.

April 9,
1984

Bad management blamed for utilities' N-plant woes

WASHINGTON (UPI) — Bad management by utility companies is the root cause of major construction and design problems at some atomic reactor projects, Nuclear Regulatory Commission experts conclude in a long-awaited report.

The study, ordered by Congress and recently completed by the NRC staff after 15 months' work, also blames the commission itself for inadequately examining the "management capability" of electric utilities before giving them permits to build enormously complex nuclear power plants.

The 500-page report follows an unprecedented series of cancellations and threatened abandonments of multibillion-dollar commercial reactor projects by financially pressed utilities.

The study was submitted March 20 by the NRC staff to the agency's five commissioners. It was to be sent to Congress last Wednesday, but the commissioners have not yet given it final approval. They are tentatively to discuss and vote on it Friday.

In its key finding, the report said "breakdowns" in utility company control over design and construction quality at unfinished reactors "had as their root cause shortcomings in corporate and project management."

Problem-plagued plants, the study said, are "characterized by the inability or failure of utility management to effectively implement a management system that ensured adequate control over all aspects of the project."

The failures of what engineers call "quality assurance" in design and construction are "part of larger breakdowns in overall project management, including planning, scheduling, procurement and oversight of contractors," it added.

* * *

MANY ELECTRIC utilities companies, the NRC staff found, committed themselves to reactor projects without understanding the technological challenge involved.

"A false sense of security growing out of prior success in fossil plant construction," the study said, led several utilities that had never previously built atomic plants to "underestimate the complexity of nuclear design and construction."

NRC experts also stressed that utility companies with successful records of building nuclear power plants "tended to view NRC requirements as minimum, not maximum, levels of performance, and they strove to establish and meet increasingly higher self-imposed goals."

Reactor projects mentioned in the report as having had "major problems relating to the quality of design and/or construction" include Marble Hill, Madison, Ind.; Midland, Midland, Mich.; Zimmer, near Cincinnati, Ohio; South Texas, Matagorda County, Texas; and Diablo Canyon, near San Luis Obispo, Calif.

Marble Hill has been canceled. Zimmer is being converted into a coal-fired plant and the others have been beset by a variety of problems delaying their completion.

Senator **Chafee**. Well, than you very much, Ms. Campbell. I appreciate that fine statement.

Ms. Caplan, Washington Representative, Environmental Action.

STATEMENT OF RUTH CAPLAN, WASHINGTON REPRESENTATIVE, ENERGY CONSERVATION COALITION

Ms. **Caplan**. Thank you, Senator Chafee. I'm happy to be here this morning to testify on behalf of the following member groups of the Energy Conservation Coalition: Environmental Action; Environmental Defense Fund; Environmental Policy Institute; Federation of American Scientists; Friends of the Earth; National Audubon Society; National Wildlife Federation; Natural Resources Defense Council; Public Citizen; Sierra Club; Solar Lobby; Sierra Club Conservation Foundation; Union of Concerned Scientists; and United Methodist Church.

You might ask why all these groups are looking so closely at an issue of utility regulation. The answer lies in the impact that CWIP has on energy policy and energy planning. And that is what I would like to focus on this morning.

The Congressional Research Service has shown that almost all new capacity requirements projected by the Department if Energy can be met through cheaper alternatives, including energy conservation, at no more than half the cost of building new generating plants.

We find that CWIP, in the guise of financial salvation for the utilities, is in fact an invitation of financial disaster; should never become routine method of financing construction.

S. 1069 promotes sound energy planning by requiring that the cost of the project and available alternatives be examined to determine the least-cost approach in meeting future demand for electrical energy services.

The framework of this is taken from the Northwest Power Act, and is contained in section 4(f)4 of 1069 as follows:

> An estimate of all the direct costs of a resource over its effective life, including, if applicable, the cost of distribution and transmission to the customer and, among other factors, waste disposal costs, end-of-cycle costs, and fuel costs, and quantifiable environmental costs as are directly attributable to such resource.

We feel that this is the very core of sound energy planning.

By contrast, the FERC Order 298, which was adopted in May 1983, allows utilities to include 50 percent of CWIP, without any consideration of financial difficulty, and without requiring a finding on the least-cost option for meeting future needs.

Even if FERC were to make such a finding, CWIP would be allowed while the Commission deliberated, undercutting the essential energy planning and consumer protection components of the least-cost finding.

I would like to point out that CWIP supports utility planning that produces over-capacity. The FERC rule itself points to the focus on additional capacity. They say in the order the prudent approach does add to financing difficulties and tends to artificially reduce the supply of capital devoted to new capacity construction; but we agree with customers that plant cancellations also, and perhaps even primarily reflect recognition of reduced demand projections. This is in the FERC order itself.

We would like to point out that the Congressional Research Service study concludes that energy efficiency improvements represent the most cost-effective means of meeting future demand.

The CRS takes the Department of Energy projection of the need for 438 gigawatts by the year 2000—that's equivalent to 438 large plants, but rather than agreeing that this should be met through building new large plants, they conclude the cost-effective mix of demand-reducing and capacity-enhancing measures primarily conservation, capacity solar and conservation to meet all but 7 percent of demand and reliability requirements in the year 2000.

Additional cost-effective conservation and load management could be available to meet the remaining 7 percent requirements.

The DOE projections themselves of the 438 gigawatts have been called into question by a number of experts, most recently by the Office of Technology Assessment. This shows that likely projections range from just 9 gigawatts to 454 gigawatts. And OTA concludes that it would be possible for most utilities with some effort to avoid building central station powerplants altogether until the last 1990's by encouraging conservation, load management, and cogeneration.

I would like to point out that the DOE scenario would cost $1.8 trillion in current dollars. This is a lot of capital to expend when there are cheaper alternatives available for meeting our future needs.

I would like very briefly to point out some of the measures that can be used to meet our future demands.

Twenty-seven gigawatts of peak demand can be saved through cost-effective cooling efficiency improvements, according to CRS. High-intensity discharge bulbs for lighting can save 12 gigawatts.

Senator CHAFEE. What page are you on now, Ms. Caplan?

Ms. CAPLAN. I'm starting now on page 8, Senator Chafee, and am just summarizing through the next few pages.

Senator CHAFEE. I just want to note these down, because I will be asking you and the next panel what their thoughts are on these.

So the first one was the savings——

Ms. CAPLAN. From appliance efficiency improvements.

CRS has concluded that 27 gigawatts could be saved.

Beyond this, Dr. Geller has shown that there are more savings available if you use the most-efficient appliances that are now available on the market.

In lighting, 12 gigawatts could be saved. In electric——

Senator CHAFEE. I suppose in all fairness that the investment in these items on the part of the consumer would be rather substantial, too. I'm not arguing with your points, but I notice that Dr. Geller—Mr. Geller estimates 13 gigawatts in potential savings for refrigerators, freezers, and so forth, electric water heaters with heat pumps. He's talking about the latest technology in those areas.

Ms. CAPLAN. The latest available on the market, that is correct.

Senator CHAFEE. So I presume that the answer is going to be, oh, sure, but that involves a very substantial investment by the consumer to get a new refrigerator, for example.

Ms. CAPLAN. Senator Chafee, we once calculated for New York State that a utility could buy efficient air-conditioners for every user of air-conditioners in the State cheaper than they could build a new powerplant and meet the same capacity needs. So there are different ways to finance these purchases.

Senator CHAFEE. That's an intriguing thought. I hadn't looked at it that way. [Laughter.]

Senator CHAFEE. All right, go ahead.

Ms. CAPLAN. Savings in electrically-heated homes primarily through improved insulation and window-glazing could save 42 gigawatts.

And in cogeneration now going to a study by the Office of Technology Assessment, 150 gigawatts of electric capacity can be saved.

Cogeneration is in an area that is beginning to take off in this country.

In summary, we can look just as residential conservation and cogeneration alone as saving 230 gigawatts by implementing cost-effective measures, and almost 300 gigawatts if you look at what's available on the market.

By contrast, building central station plants lacks flexibility to respond to changing demand for electricity.

Senator CHAFEE. Okay, now, why don't you address the California case on page 10.

Ms. CAPLAN. Barbara Barkovich of the California Public Utilities Commission has testified at a committee hearing that in the 1970's the utilities in California were not in good financial health, and yet, without California allowing CWIP in rate base, they now have very substantially improved their financial condition and can be considered in good financial health.

She attributes this to two factors. One, is that they have cut back on what turned out to be unnecessary projects; and, two, that the State has provided some ratemaking methodologies of providing more financial stability for the industry without the use of CWIP.

The utilities in California have been pursuing a number of alternatives, including load management and cogeneration and alternative energy sources.

Senator CHAFEE. All right, Ms. Caplan, why don't you summarize quickly, because you have gone a little over the time here.

Ms. CAPLAN. I would like to conclude by speaking to the issue of prudency, because the argument has been made that current FERC policy on CWIP leads to an early consideration of the issue of prudency of an investment. I would like to point out that order 298 makes no mention of prudency as a precondition for allowing CWIP in rate base. S. 1069, on the other hand, States explicitly that CWIP is not to be allowed for any costs imprudently incurred; further, the bill requires a finding that utility mismanagement will not hinder alleviation of severe financial difficulty in the future.

The question of prudency arises most naturally when a utility finds itself in financial difficulty. Yet that FERC order avoids any consideration of this issue whatsoever.

Given the lack of any explicit requirement in the FERC order that that need be examined, and the irrelevance of financial difficulty to FERC's granting CWIP, there does not appear to be a basis to assume that FERC will in fact take a careful look at the prudency of an investment at the time it examines CWIP.

Moreover, even in the event FERC were to examine prudency, it would be done after granting CWIP subject to rebate. Under this policy, a utility could receive CWIP for an investment later found to be imprudent and not have to rebate the money until after the project was completed, depending on when that request was made and how long the hearing took.

Having FERC require a least-cost finding before granting CWIP in contrast, sends a far stronger signal to utilities that the prudency of the investment will be given serious consideration by FERC.

We feel that S. 1069 sets very solid policy for the granting of CWIP.

And we would like to thank you for your leadership in introducing this bill.

Thank you.

[The prepared statement of Ms. Caplan follows:]

BEFORE THE U.S. SENATE

SUBCOMMITTEE ON ENERGY REGULATION

OF THE COMMITTEE ON ENERGY AND NATURAL RESOURCES

TESTIMONY OF RUTH CAPLAN

ON

CONSTRUCTION WORK IN PROGRESS
AND
LEAST-COST ENERGY PLANNING

Presented on behalf of the following members
of the Energy Conservation Coalition:

Conservation Foundation
Environmental Action
Environmental Defense Fund
Environmental Policy Institute
Federation of American Scientists
Friends of the Earth
National Audubon Society
National Wildlife Federation
Natural Resources Defense Council
Public Citizen
Sierra Club
Solar Lobby
Union of Concerned Scientists
United Methodist Church, Board of Church and Society

May 18, 1984

SUMMARY OF TESTIMONY

FERC Order 298, which allows 50% of on-going construction costs to be included in the wholesale rate base of a utility without consideration of financial difficulty, is a radical departure from traditional ratemaking principles and from past FERC policy. One purpose of the change is "mitigation of any bias against the construction of new generating facilities."

The Department of Energy assumes that 438 gigawatts of new capacity will be needed by 2000, at a cost of $1.8 trillion in current dollars. The nation cannot afford this kind of capital expenditure, particularly when cheaper alternatives for meeting future demand are ignored.

In planning to meet future demand for electric energy services, it is essential that least-cost energy planning be adopted. Rather than assuming that all future needs must be met by central station plants, the life-cycle costs of a range of alternatives need to be examined, including energy conservation, load management, rate reform and renewable energy sources. Recent studies indicate that 230-300 gigawatts could be saved by residential efficiency measures combined with industrial cogeneration. More savings are possible in the commercial and industrial sectors.

While the FERC Order asks for information on the utility's construction program and whether it is consistent with a least-cost plan, this is only window dressing. There is no requirement for a hearing or a finding by the Commission.

S 1069 establishes the proper regulatory framework for determining whether CWIP should be allowed. The bill requires an evidentiary hearing to examine a range of alternatives and a finding as to whether the project is reasonably necessary to meet future demand at least system cost. This helps to protect ratepayers from the investment risk assumed with CWIP and encourages prudent investments by utilities.

Mr. Chairman and members of the Subcommittee, my name is Ruth Caplan, Washington Representative for Environmental Action. Today I am testifying on behalf of the following members of the Energy Conservation Coalition: Environmental Action, Environmental Defense Fund, Environmental Policy Institute, Federation of American Scientists, Friends of the Earth, National Audubon Society, National Wildlife Federation, Natural Resources Defense Council, Public Citizen, Solar Lobby, Sierra Club, The Conservation Foundation, Union of Concerned Scientists, and United Methodist Church, Board of Church and Society. Thank you for this opportunity to present our views on the proper regulatory treatment of construction work in progress (CWIP) and on legislation which has been introduced on the use of CWIP by the Federal Energy Regulatory Commission (FERC).

Our concern is twofold: the impact of CWIP on energy planning decisions and the financial ramifications for ratepayers. CWIP encourages utilities to continue overly ambitious construction programs, while discouraging them from pursuing more cost-effective measures such as energy conservation. Ratepayers are hurt in the short term by higher rates under CWIP and in the long term by being forced to finance billions of dollars worth of new, often unnecessary, construction. The Congressional Research Service has shown that almost all new capacity requirements projected by the Department of Energy can be met through cheaper alternatives, including energy conservation, at no more than half the cost of building new generating plants. CWIP, in the guise of financial salvation for utilities, is in fact an invitation to financial disaster and should never become a routine method of financing construction.

S 1069 ESTABLISHES PROPER REGULATORY FRAMEWORK

We commend Senator Chafee and the cosponsors of The Construction Work in Progress Policy Act, S 1069, for introducing a bill which addresses these concerns. S 1069 requires a financial analysis of the life-cycle costs of the project and available alternatives to determine the "least-cost" approach to meeting future demand for electrical energy services.

The framework for making this comparison is contained in the definition of "system cost" taken from the Northwest Power Act and contained in Section 4(f)(4) of S 1069:

> "an estimate of all the direct costs of a resource over its effective life, including, if applicable, the cost of distribution and transmission to the customer and, among othe factors, waste disposal costs, end-of-cycle costs, and fuel costs (including projected increases and decreases), and such quantifiable environmental costs as are directly attributable to such resource."

When environmental costs of a resource are properly accounted for, the advantage of meeting future energy needs by improving the efficiency with which we use our energy resources becomes clear.

S 1069 requires a finding by FERC that the project is "reasonably necessary to meet the demand of its customers for electric energy-related energy services at least system cost," before allowing CWIP on a case by case basis to relieve severe financial difficulty of the utility building the project.

By contrast, FERC Order 298 adopted in May 1983 allows utilities to include 50% of their on-going construction costs in rate base, without any consideration of financial difficulty and without requiring a finding as to whether the project is the least-cost option for meeting customers' future energy needs or explicitly considering environmental costs. Even if FERC were to make such findings, CWIP would be allowed while the Commission deliberated, undercutting the essential energy planning and consumer protection components of the least-cost finding.

BACKGROUND

CWIP has become an issue before Congress because FERC Order 298 represents a radical departure from traditional ratemaking policy regarding the financing of new facilities such as power plants. In the late 19th century, Smyth v. Ames established the principle that ratepayers should pay for a new facility only when it became "used and useful." (169 U.S. 466 at 546) FERC cited this precedent as recently as 1980, explaining: "The purpose of this principle is to insure that costs of a facility are borne by those who use it." (FERC Opinion 104 at 3)

When this principle is applied to utility ratemaking, the value of a plant under construction is not added to the utility's rate base until the plant comes into service and produces electricity. Instead the utility is allowed to accumulate Allowance for Funds Used During Construction (AFUDC) in a separate account, reflecting the cost of capital to the utility. When a plant comes on line, these AFUDC amounts are placed in rate base as part of the cost of the project. Under the alternative, referred to as CWIP, the utility is allowed to include construction costs in the rate base during the construction period, thus requiring ratepayers to help finance the project. Assuming that the earned rate of return is equivalent to the interest rate on the capital, ratepayers cover the utility's cost of capital when CWIP is included in rate base.

Prior to 1976, FERC did not allow utilities under its jurisdiction to include CWIP in wholesale rate bases. In 1976, FERC issued Order 555 which allowed CWIP for pollution control, coal conversion, and severe financial distress. This deviation from previous policy came at a time when utilities were engaged in very ambitious construction programs, prices were rising and growth in demand was slowing--circumstances new to utility managers.

Rather than adjusting their construction programs to these new circumstances, the industry pressed state and federal regulators to provide further rate relief. High interest rates, long construction periods, and revenue erosion, as consumers cut back energy use in response to higher prices, combined to make it more difficult for utilities to raise capital.

CWIP represented immediate cash relief from ratepayers, without the utility having to make an unseemly request for a higher rate of return.

When utilities complained to FERC that the agency had not granted CWIP under the severe financial distress standard, the agency agreed, in 1981, to proceed with a proposed rulemaking to develop guidelines and criteria to define "severe financial difficulty." Instead of defining the term, however, FERC concluded the rulemaking by adopting a new rule in May 1983, which allows CWIP for pollution control, coal conversion and 50% of all remaining construction costs, without any consideration of financial distress. As explained below, this short-term remedy spells long-term disaster.

CWIP AND EXPENSIVE EXCESS CAPACITY

The impact of CWIP policy on ratepayers must be examined in the broad context of its effect on utility planning to meet future demand for electric energy services. CWIP encourages utilities to continue in a business-as-usual mode in planning future capacity. When advance financing from ratepayers is assured through CWIP, utilities are more likely to build large, capital-intensive generating plants, without seriously considering cost-effective energy conservation measures.

The FERC rule itself supports this conclusion. FERC asserts that its CWIP rule is necessary "to mitigate any bias which may discourage additional capital investment in needed facilities." (Order 298 at 11) This premise is fundamentally flawed. Even without a national policy allowing 50% CWIP in rate base, the nation's utilities have been building too much capacity. FERC is aware of this contradiction, for they state in their order:

> "...the present approach does add to financing difficulties and, therefore, tends to artifically reduce the supply of capital devoted to new capacity construction. But we agree with the customers that plant cancellations also (and perhaps

> even primarily) reflect recognition of reduced demand projections." (Ibid. at 7)

When the premise is restated later in the Order, FERC omits any mention of whether or not the additional plants are needed, stating: "mitigation of any bias against the construction of new generating facilities." (Ibid. at 27) It is clear to us that the FERC order is steering utility energy planning toward building more plants.

A growing number of studies, from the Ford Foundation's Energy Policy Project a decade ago to the recent Congressional Research Service (CRS) report, "A Perspective on Electric Utility Capacity Planning, August 1983," have pointed to the need for more innovative approaches to meeting future customer demand. These studies all conclude that energy efficiency improvements represent the most cost-effective means of meeting future demand.

The CRS study takes the Department of Energy's (DOE) projection of future demand as a starting point, i.e., that 438 gigawatts of new generating capability will be needed by the year 2000. (One gigawatt equals 1000 megawatts, the size of a large generating plant.) But, rather than agreeing with DOE that large numbers of new plants should be built, CRS concludes that a cost-effective "mix of demand reducing and capacity enhancing measures"--primarily energy conservation, passive solar and cogeneration--can meet all but 7% of demand and reliability requirements in the year 2000, together with completion of projects for which regulatory approval has already been sought and existing capacity not retired by the year 2000. Additional cost-effective conservation and load management could be available to meet the remaining 7 percent requirements. (CRS Report, pp. 12, 13, 41)

The DOE projections themselves have been questioned by a variety of experts, most recently in a February 1984 report by the Office of Technology Assessment (OTA). The report shows that the DOE projection of 438 gigawatts in new capacity required by the year 2000 is at the high end of alternative projections considered by OTA. OTA's projections range from 9 gigawatts to 454 gigawatts to meet demand growth and to retire existing capacity. ("Nuclear Power in an Age of Uncertainty," OTA-E-216, February, 1984, p. 13)

Even if growth in electric demand continues at 2.6%, the 1973-1982 average, OTA concludes that:

> "It would be possible for most utilities, with some effort, to avoid building central station powerplants altogether until the late 1990's by encouraging conservation, load management, cogeneration, and small sources of power from hydro and wind; or by purchasing from U.S. utilities with excess capacity or from Canadian utilities; or by keeping existing plants on past normal retirement age." (Ibid. p. 32)

Only when one accepts the Department of Energy (DOE) scenario that future demand will require the construction of 438 gigawatts of new central station generating capability by the year 2000, rejecting alternatives such as conservation, could one view CWIP as necessary to remove bias against building all these plants. CWIP becomes necessary in order to circumvent market forces, by shifting significant investment risk from investors to consumers.

Whether or not DOE's demand projections are correct, Congress needs to take a hard look at the cost implications of the DOE scenario. The 438 gigawatts are projected to cost $1.8 trillion ($1 trillion in constant 1982 dollars). This is $120 billion per year for the next 15 years, or two-thirds the size of the current federal deficit. Assuming FERC has jurisdiction over 10% of these construction costs given its jurisdiction over 10% of total sales, FERC would be allowing CWIP financing for hundreds of billions of new investment.

The most disturbing aspect of this scenario is that more cost-effective alternatives are precluded. Recent history has shown that when utilities become overextended financially, they cannot afford to have their ratepayers conserve. They need revenues to cover their debt. Further, they need to increase sales, even if this requires them to offer discount rates to bring on new load.

This trend has already begun in response to excess capacity. Two years ago Consolidated Edison first offered discount rates for businesses moving to certain sections of New York City. Since then, utilities in Michigan, South Carolina, Georgia, California, Rhode Island and Pennsylvania have been allowed to offer special discounts, sometimes targeting particular industries, sometimes giving the discount for new load, and sometimes tying it to job creation. Such discounts encourage consumption and create a disincentive to industry to pursue alternatives such as cogeneration and energy efficiency improvements. The discounts are also clearly inequitable, as costs are shifted to industries and businesses not receiving the discount and to residential customers.

In at least one instance, state regulators have joined the move away from energy conservation. Oregon Public Utility Commissioner Lowell Maudlin recently questioned whether Oregon's energy conservation programs are cost-effective or socially desirable in light of the region's power surplus and has scheduled hearings to examine the question. (The Oregonian, March 1, 1984) The combination of industrial discounts and cuts in energy conservation programs in response to current overcapacity sets the stage for another round of expensive construction in the future.

Not only is this strategy far more expensive than available alternative means of meeting future electric energy needs, it increases potential environmental risks from acid rain, the greenhouse effect and the nuclear fuel cycle. Equally important, the economic vitality of our nation is damaged by this tremendous diversion of capital resources away from other productive uses. Fortunately, we do not have to choose this path.

LEAST-COST ENERGY PLANNING

Least-cost energy planning is a key element of both S 1069 and HR 555. The concept was first incorporated into federal law as part of the Pacific Northwest Electric Power Planning and Conservation Act. Under least-cost planning, available alternatives for meeting future electric energy needs with adequate reliability are examined. These alternatives include measures to reduce future demand such as energy efficiency improvements and load management, as well as measures to increase future capacity. All direct costs of each resource are then estimated over its effective life including, if applicable, the cost of distribution and transmission to the customer, waste disposal costs, end-of-cycle costs, fuel costs and quantifiable environmental costs directly attributable to the resource.

The least-cost planning approach promotes utility decisionmaking which is fiscally responsible and environmentally wise. It encourages the utility to assess fully the long-run implications of its energy planning. The Northwest Power Planning Council's "Regional Conservation and Electric Power Plan 1983" provides an indication of the outcome of such planning. The Council concluded that efficiency improvements can provide a substantial percentage of the region's growth in electric energy needs for the remainder of the century, ranging from 97% in a low-growth scenario to almost 50% with a scenario projecting more economic growth than the region has previously experienced. Similarly, the California Energy Commission has concluded that cost-effective conservation, cogeneration and renewable energy resources can displace 84% of utility oil and gas use by 1994.

While rising energy prices since the 1973 Arab oil embargo have resulted in slowed growth in demand, the potential for energy efficiency improvements remains significant. For example:

- Appliances--While the market has served to improve energy efficiency of appliances purchased directly by homeowners, it has not resulted in the most efficient appliances being purchased. Nor have builders and landlords been induced to purchase efficient appliances; yet, central air conditioners, water heaters and refrigerators all present significant potential for electric energy savings. CRS concludes that 27 gigawatts of peak demand can be saved through cost-effective cooling efficiency improvements (CRS, p.132). Howard Geller, author of Efficient Residential Appliances, estimates that 64 gigawatts could be saved if all air conditioners were replaced by the most efficient units now available. Similarly, Geller estimates 13 gigawatts in potential savings for refrigerators and refrigerator/freezers and 15 gigawatts in savings from electric water heaters with heat pumps.

- Lighting--Lighting accounts for about 20% of total electricity use. The CRS study found that the high intensity discharge bulb was cost effective in all regions of the U.S. Geller estimates that these bulbs could reduce residential lighting energy use by about two-thirds, saving 12 gigawatts.

The commercial sector accounts for much of the nation's lighting requirements. In addition to direct energy use, lighting adds to the commercial air conditioning load. Significant savings can be achieved through proper design of commercial buildings; however, studies do not allocate specific savings to lighting alone.

- Heating--CRS estimates that 42 gigawatts in peak demand can be saved if all cost-effective energy conservation measures were adopted in electrically heated homes, primarily improved insulation and window glazing. (CRS, pp. 118 and 132) Again, commercial heating savings are not separated from overall building savings in studies of the commerical sector.

- Cogeneration--Cogeneration could provide as much as 150 gigawatts of electrical capacity by the year 2000, about 17 percent of projected national capacity, according to an Office of Technology Assessment report, "Industrial and Commercial Cogeneration."

In summary, cost-effective residential savings plus cogeneration, represents 230 gigawatts of equivalent capacity, with potential savings reaching 296 gigawatts when the most efficient residential appliances are substituted for current stock. This does not include additional significant savings possible in the commercial and industrial sectors.

By contrast, FERC's policy on CWIP virtually ignores cost-effective alternatives and encourages construction of capital-intensive power plants. This approach lacks flexibility in responding to changes in load growth because of the long lead time required to construct power plants. Further, if growth in electric demand stalls in response to higher prices resulting from CWIP, a utility is more likely to be forced into severe financial difficulty in building a project which requires large amounts of capital.

California provides a case in point. In the 1970's the utilities were in poor financial health. According to testimony by Barbara Barkovich of the California Public Utilities Commission, the commission did not allow CWIP in rate base, yet the financial health of California's utilities has improved. Without the inducement provided by CWIP to invest in expensive generating plants and with positive encouragement by regulators, the utilities have pursued conservation, load management and renewables. Barkovich attributes the utilities' improved financial position to two factors:

> "One is that they have cut back on what turned out to be unnecessary projects, and two, I think, because we have devised some ratemaking methodologies for providing more financial stability for the utility industry without the use of CWIP." (Hearing on HR 555 before the House Subcommittee on Energy Conservation and Power, April 28, 1983, p. 271.)

HOW CWIP BURDENS CONSUMERS

FERC argues in its order that the rule will give consumers the proper price signals and mitigate rate shock when a plant is brought on line. Neither of these objectives are met in a manner which helps consumers.

First, the Commission states that CWIP will advance the objective of:

> "providing for electric rates to more accurately reflect the costs of providing future service, allowing the need for new capacity to be tested, so far as possible, by the marketplace;" (Order 298 at 27)

The price signal arrives too late. Rates are increased by CWIP when the construction has already begun. There is very little that consumers can do at this stage to stop the project. Given the long lead times for current construction, the consumer is tied into higher rates to pay for the project for many years.

Meanwhile the project is not being tested by the marketplace where it really counts--by investors and their advisors. By violating the "used and useful" principle, FERC has shifted investment risk from investors to ratepayers and has weakened the incentive on the part of the investment community to examine carefully the prudence of a project. While CWIP removes substantial investment risk from stockholders and bondholders by virtually guaranteeing them an immediate return on their investment, the ratepayer has no guaranteed return.

CWIP payments are equivalent to a no-interest loan from ratepayers. The utility need not begin to repay the loan until the plant is completed, with repayment stretching over the life of the plant. Some argue that the distinction between CWIP and AFUDC is simply a matter of when ratepayers pay for a plant. This premise makes FERC's second stated objective of furthering "the goal of rate stability by providing for smoother increases in electric rates to consumers" (Ibid. at 27) appear reasonable. The premise is not true, however, for the reasons detailed below.

CWIP results in greater cost to consumers in the long run. FERC concedes in its order that:

> "Assuming CWIP-based rates are slightly higher for the foreseeable future, as the Commission concedes is plausible, no present value analysis will show that CWIP-based rates are less costly to customers than AFUDC-based rates, regardless of the consumer discount rate utilitized." (FERC Order 298 at 106)

Recently the American Public Power Association had a present value analysis performed using 50% CWIP in rate base. The analysis shows that even when the rate of return is assumed to be at the same level as the consumers' cost of capital, customers are better off not paying CWIP for every year until the last year of a plant's 30-year life when present value is equivalent. This refutes the testimony of the Edison Electric Institute which purports to show that CWIP benefits consumers.

CWIP increases rates before ratepayers can benefit from lower fuel costs. With slower growth in demand for electricity, utilities often justify new plants to back-out expensive oil. When CWIP is charged to ratepayers, they must pay higher rates during construction before they can benefit from the lower fuel costs. On the other hand, when capital costs are charged during operation, they can be moderated by lower fuel costs.

When consumers pay is not independent from who pays. CWIP raises equity concerns because current ratepayers are charged for a facility to benefit future ratepayers. In a population which is mobile and which has increasing numbers of senior citizens, a large number of ratepayers are forced to finance a project which will provide them no benefit. If the project is being built to serve new customers, CWIP places an even larger burden on current ratepayers, because the burden of financing a plant is not spread out over the larger number of future ratepayers.

CWIP can have even more severe economic consequences for ratepayers to the extent that it removes the incentive for the investment community to examine the prudence of a project. Recently, we have seen the catastrophic consequences when Wall Street ignored the gathering clouds of financial disaster. WPPSS was the largest bond default in U.S. history. Investors thought their returns were guaranteed through take-or-pay contracts. WPPSS is not an anomaly. The recent rash of plant cancellations in response to revelations about cost escalations arising from poor management (Zimmer, Marble Hill, Seabrook 2, for instance) is ample warning that the investment community must protect their clients' investment by actively investigating the competency of plant management. CWIP encourages just the opposite.

In New York, where the Public Service Commission made an exception to its general policy of not allowing CWIP and granted the Long Island Lighting Company CWIP for its Shoreham plant, the utility is now facing possible bankruptcy. Further, the PSC staff has recently concluded that imprudent management contributed to cost escalations and is recommending that the company not be allowed to include $1.8 billion of its construction costs in its rate base. The company, its stockholders and ratepayers would have all been better off if state regulators and Wall Street had taken a hard look at the project early on, rather than regulators allowing the company to squeak through with CWIP.

Cancellation of a CWIP-financed project is a double whammy for consumers. The life of a financially shaky project may be prolonged by using CWIP financing, but may still have to be cancelled, particularly if demand has lagged. Under current FERC policy, established by FERC Opinion 134, the investor is made whole by requiring customers to pay for the cost of a cancelled project. While investors no longer earn a return on their investment when a project is cancelled, the major financial burden falls on ratepayers. FERC Chairman Raymond O'Connor confirmed this policy during the first day of subcommittee hearings when he admitted under questioning that FERC has always allowed utilities to charge customers for cancellation costs.

When the impact of CWIP-based rates on utility planning is examined, it becomes clear that CWIP can create a long-term burden on ratepayers. As long as a utility grows, CWIP provides more revenues than AFUDC. If a utility stops growing, however, CWIP-based rates fall below AFUDC rates. ("Construction Work in Progress in Electric Base Rate, CRS 1982, p. 21) CRS concludes its study by asking: "Considering that including CWIP in the rate base may encourage construction, it is necessary to ask whether FERC's proposal to include CWIP would best serve ratepayers." (Ibid. p. 32) Our response is no, given the least-cost alternatives which are available.

THE NEED FOR CLEAR REGULATORY POLICY

Environmentalists and consumer advocates have been proposing alternatives to construction of new generating plants for more than a decade. As early as 1973, expert testimony was presented in hearings on a construction permit for Nine Mile Two, a 1080 megawatt project planned for upstate New York. The testimony showed that demand growth would slow, allowing adequate time to meet future electric needs through energy efficiency improvements and decentralized sources of power. The arguments were rejected and construction began on the project which was to be completed in 1978 at a cost of $360 million. In 1981, with the cost having escalated to $3.6 billion and the completion target delayed to 1986, the state Public Service Commission (PSC) agreed to expedited hearings on the economics of the project. Environmentalists and consumer advocates presented testimony on the cost-effectiveness of abandoning construction and adopting an energy efficiency program, or building small coal units with the best available (BAT) environmental control equipment to meet new increments of demand. The arguments were rejected and construction continued.

On February 10, the Long Island Lighting Company (LILCO) announced it could no longer finance its 18% share of the project. On March 30, the remaining utilities announced the project would cost $5.1 billion. Now there is indication that a second participant wants out; the healthiest utility is expected to request $400 million in CWIP as part of its next rate filing--just two years after the PSC declared no CWIP would be necessary; and the PSC has estimated the project will cost $5.4 billion. Despite the current financial morass, a January 1984 analysis by the Environmental Defense Fund (EDF) has concluded: "Even now, with Shoreham virtually complete and Nine Mile 2 more than half way to completion, both plants can be cancelled and the alternative can be developed, at a substantial net savings to New York's ratepayers." EDF has determined that available conservation and small-scale generation sources are "more than adequate to meet the energy and capacity needs of all participant utilities," as well as being substantially cheaper.

The lesson to be learned from this painful process is that responsible planning cannot be easily grafted on from the outside. It must be an integral part of corporate long-term strategy. This can be accomplished either through regional planning as set forth in the Northwest Power Act or on a utility by utility basis. The key is that all potentially cost-effective measures must be analyzed. The legislation before you today takes an important step in this direction by requiring a least-cost analysis before FERC can allow CWIP in rate base. This sends a clear signal to utilities that least-cost planning is critically important.

S 1069 PROMOTES LEAST-COST PLANNING

For the reasons detailed above, least-cost energy considerations should be an integral part of agency decisions on utility financing. S 1069 assures that a least-cost assessment is made as part of the decision-making process.

Under the bill, a utility must submit a "detailed assessment of the potential of alternative means of meeting demand for electric energy-related services at less system cost," and, after an evidentiary hearing, the Commission must find that the applicant has initiated programs to acquire resources identified as being of less system cost. The Commission must also find that the project for which CWIP is requested "is reasonably necessary to meet the demand of its customers for electric energy-related energy services at least system cost." In this way, the ratepayers have a reasonable expectation that their investment will be protected.

It is important to note that, while the present FERC rule requires that the CWIP filing include Statement BM setting forth "the extent to which the investment is part of a least-cost power supply strategy," the rule does not require FERC to make a finding on whether the project is least-cost, as a condition of allowing CWIP. Thus FERC has adopted the form, but not the regulatory substance, of least-cost assessment, providing utilities with little incentive to pursue such measures.

Least-cost analysis as defined in S 1069 also promotes environmental protection, by requiring consideration of a range of alternatives, along with analysis of their quantifiable environmental costs. Alternatives include energy efficiency improvements, load management, and changes in rate design which have negligible environmental impact. Cogeneration, which can reduce net pollution by using energy more efficiently, must also be considered. The environmental costs of other options such as solar, biomass, waste, geothermal and other renewable resources are to be considered and can be compared to more traditional generating sources such as fossil fuels and nuclear. FERC Order 298 omits any mention of environmental costs as part of least-cost analysis.

S 1069 does not allow CWIP until after the Commission has held a hearing and made the necessary findings. FERC's order, by contrast, allows the utilities to include CWIP in rate base before any hearings have been held. If later hearings indicate CWIP was not justified, CWIP payments are to be rebated. Part 35.26 (e) of the order states:

> "If a public utility proposes in its filed rates to include CWIP in rate base under this section, that portion of the rate related to CWIP is collectable at the time the general rate becomes effective pursuant to Commission order, whether or not subject to refund."

Allowing CWIP "subject to rebate" is not consistent with past FERC policy. Order 555 states: "Under no circumstances will inclusion of CWIP in rate base, solely because of severe financial stress, be permitted *prior* to a *final* Commission determination on rehearing that financial circumstances justify inclusion."

The lack of meaningful regulatory oversight which arises when FERC allows rate increases subject to rebate has been clearly set forth in *City of Mishawaka v. American Electric Power Company* where the court concluded:

> "The utility was able to set its own wholesale rates for lengthy periods of time without regulatory interference. Before a prior wholesale rate had been adjudicated, the utility would, during the intervening period, file a new and higher superceding wholesale tariff which likewise automatically went into effect before adjudication. Later, whenever the federal commission managed to review a prior outdated tariff, it was found to be excessive and was reduced....When federal regulation actually occurs, the abuse is mildly remedied by refunds. Meanwhile, the victim municipalities have been continually living with unregulated wholesale rates." (616 F.2d 976, 982, 990 (7th Cir. 1980))

The current "CWIP subject to rebate" policy, combined with the lack of least-cost findings by the Commission, makes it clear that the Commission does not take the Statement BM filing requirement seriously.

PRUDENCY AND FINANCIAL DIFFICULTY

The argument has been made that current FERC policy on CWIP leads to an early consideration of the issue of prudency of the investment. Unfortunately, Order 298 makes no mention of prudency as a precondition for allowing CWIP in rate base. S 1069 states explicitly that CWIP is not to be allowed for any costs imprudently incurred. Further, the bill requires a finding that utility mismanagement will not hinder alleviation of severe financial difficulty in the future.

The question of prudency of an investment arises most naturally when a utility finds itself in financial difficulty. Yet the FERC order avoids any consideration of this issue.

Given the lack of an explicit requirement in the order that prudency be examined and the irrelevance of financial difficulty to FERC's granting CWIP, there does not appear to be a basis to assume that FERC will in fact take a careful look at the prudency of an investment at the time it examines CWIP. Moreover, even in the event FERC were to examine prudency, it would be done after granting CWIP subject to rebate. Under this policy, a utility could receive CWIP for an investment later found to be imprudent and not have to rebate the money until after the project was completed, depending on when the request was made and how long the hearing took.

Having FERC require a least-cost finding before granting CWIP sends a far stronger signal to utilities that the prudency of their investment will be given serious consideration by FERC.

CONCLUSION

In conclusion, we endorse S 1069, because its focus on least-cost energy planning assures that energy efficiency measures will be properly considered, helps to protect our environment while assuring that future energy requirements will be met, protects wholesale customers and their ratepayers, and promotes the long-run financial health of utilities.

Senator CHAFEE. Thank you very much, Ms. Caplan.

Mr. Shulman, legislative director, National Council of Senior Citizens.

Well, here we go, another vote. I will just have to go and vote. Why don't we suspend this, and I'll be right back.

[Whereupon, a recess was taken.]

Senator CHAFEE. I can see that this is going to be a difficult morning, timewise for interruptions, but we will make the best of it.

Mr. Shulman, will you proceed.

STATEMENT OF ERIC SHULMAN, LEGISLATIVE DIRECTOR, NATIONAL COUNCIL OF SENIOR CITIZENS

Mr. SHULMAN. Thank you, Senator Chafee.

I am the legislative director of the National Council of Senior Citizens, an organization representing 4½ million older Americans nationwide.

The issue of whether private utilities should be allowed to charge for construction work in progress raises significant financial and equity considerations for consumers, and especially elderly consumers.

NCSC and its members believe that the Federal Energy Regulatory Commission has abdicated its duties to protect the public interest by routinely permitting such utilities to charge 50 percent of their CWIP costs.

For this reason, we urge the Congress to overturn this rule by enacting S. 1069, the Construction Work in Progress Policy Act.

Our members have always been willing to pay their fair share, provided that they receive a service in return.

Traditionally, utility commissions have been guided by this principle in setting rates. Ratepayers should not pay for the cost of a facility until it is used and useful.

CWIP, however, violates this principle by requiring ratepayers to contribute funds for a plant before it generates even one kilowatt of electricity, or even if it is never completed at all.

CWIP also represents a tremendous shift in the risk of the construction of such plants. In the past, investors have provided the capital required to build these facilities. In return, they were compensated for their risk they took by receiving interest or dividend payments.

Admittedly, the risks have become much greater today, particularly with construction of nuclear plants. With CWIP, investors are assured of receiving a return on their investment regardless of whether a facility is completed, because ratepayers will be paying these costs up front.

We are also concerned about the legacy which senior citizens will leave to their children and future generations. We want them to be assured of a reasonable and reliable source of energy, much as we have enjoyed over the past several decades.

The electric utility industry, however, has significant over-capacity today. It appears these reserves will be ample to meet the country's needs for some time to come.

While this situation exists, perhaps it is time for the industry to begin actively exploring less costly, more innovative means of meeting the Nation's power needs in the future.

S. 1069 recognizes each of these concerns and responds to them well. If a private utility has to build a plant and it cannot secure the capital through other means, then the bill would enable that company to seek CWIP relief from FERC. The bill does not, however, give utilities the opportunity to charge customers automatically for half their CWIP costs as the Commission is doing under its new rule.

The House of Representatives has already demonstrated its concern over rising consumer electric bills by approving a comparable measure, H.R. 555, by a strong bipartisan vote.

NCSC hopes that the Senate will take similar action by approving S. 1069.

I want to thank you for this opportunity, Senator.

[The prepared statement of Mr. Shulman follows:]

Statement

of

Eric Shulman, Legislative Director
National Council of Senior Citizens

on

S. 817, S. 1069, and H.R. 555
The "Construction Work in Progress Policy Act of 1983"

before the

Subcommittee on Energy Regulation
Senate Committee on Energy and Natural Resources

May 18, 1984

Mr. Chairman, members of the subcommittee, my name is Eric Shulman. I am Legislative Director of the National Council of Senior Citizens, an organization representing 4.5 million older Americans nationwide. Most of our members live on low and fixed incomes; for them, spiralling energy costs are a terrific hardship. I am here today to discuss utility charges to consumers for construction work in progress. We believe that, in many cases, these charges unfairly and unnecessarily increase local electric bills.

The issue of whether private utilities should be allowed to charge for construction work in progress (CWIP) raises significant financial and equity considerations for consumers, especially the elderly. NCSC and its members believe the Federal Energy Regulatory Commission (FERC) has abdicated its duties to protect the public interest by routinely permitting such utilities to charge 50 percent of their CWIP costs. For this reason, we urge the Congress to overturn this rule by enacting S. 1069, the "Construction Work in Progress Policy Act of 1983."

Energy costs in general, and electric utility rates in particular, are among the most important "pocketbook" issues to NCSC and its members. Costs for natural gas, the heating fuel used by most older Americans, have more than doubled since 1978, increasing by 27 percent this winter alone. The real cost of electricity has risen 57 percent over the past decade.

Our members live on fixed incomes, struggling to make "ends meet" with the limited amount of dollars they receive. Every dollar spent to pay higher electric bills resulting from CWIP are dollars which cannot be spent for other necessities, including health care, housing, food, and clothing. Many members also live in fear that they will be unable to pay higher electric bills and will have their power turned off, leaving them with no heat during the winter or cooling during the summer. Such energy shutoffs pose especially life-threatening risks to older Americans who are more susceptible to hypothermia and hyperthermia.

Our members have always been willing to pay their fair share, provided that they receive a service in return. Traditionally, utility commissions have been guided by this principle in setting rates -- ratepayers should not pay for the cost of a facility until it is "used and useful." CWIP, however, violates this principle by requiring ratepayers to contribute funds for a plant before it generates one kilowatt of electricity, or even if it is never completed.

The "used and useful" principle remains as valid today as when it was first adopted nearly ninety years ago. Given the fact that it takes 10 to 12 years, on average, to complete a generating plant, many of our members may have passed away before they would receive any benefit from their CWIP contribution.

CWIP also represents a tremendous shift in the risk of the construction of such plants. In the past, investors have provided the capital required to build these facilities. In return, they were compensated for the risks they took by receiving interest or dividend payments. Admittedly, the risks have become much greater today, particularly with the construction of nuclear plants. With CWIP, investors are assured of receiving a return on their investment, regardless of whether a facility is completed, because ratepayers pay these costs "up front."

The risks being foisted on to ratepayers are hardly insignificant. Read the daily press or turn on the evening news and you may hear a news story announcing the cancellation of another facility. Seabrook, Marble Hill, Zimmer; the list could go on of the 100 or more plants cancelled over the last several years. And this does not include plants such as Shoreham, Byron, Diablo Canyon -- will they ever be brought on line?

We are also concerned about the legacy which we leave our children and future generations. We want them to be assured of a reasonable and reliable source of electricity, much as we have enjoyed over the past several decades. The electric utility industry, however, has significant overcapacity today. It appears these reserves will be ample to meet the country's needs for some time to come. While this situation exists, perhaps it is time for the industry to begin actively exploring less costly, more innovative means of meeting the nation's power needs in the future.

S. 1069 recognizes each of these concerns and responds to them well If a private utility has to build a plant, and it cannot secure the capital through other means, then the bill would enable that company to seek CWIP relief from FERC. The bill does not, however, give utilities the opportunity to charge customers automatically for half their CWIP costs as the Commission is doing under its new rule.

S. 1069 also includes essential protections for consumers. It ensures that companies must justify their need for extraordinary rate increases and can only receive that amount of CWIP required to overcome their financial difficulties. It ensures that utilities will look for the least costly means of meeting their consumers' electricity demand. It ensures that companies will seek innovative ways of financing their projects. And it ensures that ratepayers will only pay for prudently incurred expenses. Each of these requirements is reasonable and is the least we can have FERC consider before utilities are allowed to charge CWIP.

The House of Representatives has already demonstrated its concern over rising consumer electric bills by approving a comparable measure, H.R. 555, by a strong bipartisan vote, 288 to 113. NCSC hopes the Senate will take similar action by approving S. 1069.

Thank you for this opportunity to testify before the subcommittee.

Senator **Chafee**. Thank you, Mr. Shulman.

Mr. Hamm, President, National Association of State Utility Consumer Advocates.

STATEMENT OF STEVEN W. HAMM, PRESIDENT, NATIONAL ASSOCIATION OF STATE UTILITY CONSUMER ADVOCATES AND CONSUMER ADVOCATE FOR SOUTH CAROLINA

Mr. **Hamm**. Senator Chafee, NASUCA welcomes the opportunity to appear before you.

Briefly summarizing the positions that we have placed in our written statement; we are opposed to the automatic inclusion of CWIP regardless of the financial health of any specific utility.

And, Senator Chafee, I would suggest that that is ultimately the issue that your bill addresses: Do you assist every utility in the United States regardless of their financial health, or do we, in the regulatory process, focus on the specific needs of utilities that have financial problems?

The present FERC rule throws a vast and expensive blanket over every ratepayer in the United States regardless of the financial need of utilities. And, indeed, in reviewing the testimony of the EEI witness at the previous hearing, they go on and state very conclusively that they ought to get CWIP regardless of the financial health. And we suggest that from a regulatory standpoint, a public policy standpoint, and even from a political standpoint that is inappropriate, unwise, and indeed extremely costly to the economic system that we belong to.

It is especially interesting to note that as recently as 1981, FERC concluded that CWIP was not appropriate because it applied a mismatch between those that pay and those that receive benefits. They also concluded that no CWIP was appropriate because of its impact in duplicating the unregulated economic markets that we all must operate in.

Now, in 1984, when our electric utilities are in much better shape than they have been in years, their cash flows are better, their bond ratings have stabilized, we now see FERC enacting a rule that automatically allows, without subject to individual specific review, the 50 percent inclusion.

I would suggest that the problem that we're now seeing is that the utilities are talking out of both sides of their mouth, between the State regulatory process, the FERC process, and the comments they make before you and your committee.

We need to recognize what is going on. The economic markets are saying to the utilities, we are not entirely satisfied that the forecasts that you have relied upon to build some of these plants are in fact reliable, and, thus, the revenues necessary to pay for that plant are going to be there when they come on line.

The economic markets are saying, if you can demonstrate to us that the plant is needed, and if it is needed, in fact, the revenues are going to be there, we will finance those plants because in fact you can show the cash-flow necessary to pay for it.

There's also the issue of overcapacity. Even the chairman of the Iowa Commission in front of a House committee some months ago pointed out that the industry as a whole is over-capacity of 30 to 40 percent when the industry standard itself is 20 percent.

There's also the issue of abandonment.

Senator CHAFEE. Well, that obviously will be a point of contention from the next panel, I presume; the industry will dispute what you and Mr. Shulman have both said; Mr. Shulman having said the electric utility industry has significant over-capacity today.

I think in all fairness to the industry's witnesses, I suppose the term overcapacity must be defined. I don't know what is—you say 20 percent overcapacity is the safe margin.

Mr. HAMM. I don't say that, the industry says that.

Senator CHAFEE. Is that correct?

Mr. HAMM. Yes, sir. That is the EEI position. I don't think any industry witness would disagree with the general industry standard. And again, I believe that the issue that I'm raising is entirely appropriate. The question is, are we going to look at the specific circumstances surrounding the economic status of a particular utility, or are we going to do some thing automatically.

Remember that the regulatory process was designed to conform to economic markets. And, of course, under this kind of rule, the FERC rule, that is not happening. Your bill, S. 1069, in fact attempts to insert an economic standard into the process.

There are three reasons that have been suggested by the utility industry and FERC that this is inappropriate. I think they all fall under their own weight. One is the question of giving consumers better price signals; and, two, is the question of avoiding rate——

Senator CHAFEE. Hold on 1 minute. We have a problem here.

[Pause.]

Senator CHAFEE. Here's our situation. We are not permitted to meet beyond 2 hours after the Senate session begins. When we scheduled this hearing we never dreamed that the Senate would be coming in at 8:30 in the morning—and I don't think it ever has before.

Now, there is a protest, so that no committee may go beyond the prescribed time. That puts us in a difficult situation.

I know many people have come long distances. Let me just see the situation here as far as the panels go.

[Pause.]

The options we have are really to, in effect, go through this very swiftly, two more panels, in half an hour, or to schedule it again with adequate lead time and have the folks come back.

Mr. Taulbee, would you come back?

Mr. TAULBEE. I would, sir.

Senator CHAFEE. How about Mr. Eichorn?

Mr. EICHORN. Yes, I would, sir.

Senator CHAFEE. Mr. Scott?

Mr. SCOTT. Yes, sir.

Senator CHAFEE. Mr. Hicks?

Mr. HICKS. Yes, sir.

Senator CHAFEE. O'Cheskey?

Mr. O'CHESKEY. Yes.

Senator CHAFEE. Well, everybody's in step, aren't they?

Mr. Munsey?

Mr. MUNSEY. Yes, sir.

Senator CHAFEE. And Mr. Baeten.

Mr. BAETEN. Yes, sir.

Senator CHAFEE. OK, on that basis, we will just proceed.

Well, how about the last panel.

Mr. Matson?

Mr. MATSON. What was the question?

Senator CHAFEE. The question was, Could you come back if we scheduled another hearing with adequate lead time?

Mr. MATSON. Yes, sir.

Senator CHAFEE. Mr. Wheatley?

Mr. WHEATLEY. Yes, sir.

Senator CHAFEE. Mr. Nathan?

Mr. NATHAN. Yes.

Senator CHAFEE. Mr. Bagge?

Mr. BAGGE. Yes.

Senator CHAFEE. Mr. Brown?

Mr. BROWN. Yes, sir.

Senator CHAFEE. Well, there's uniformity here.

Mr. Ewert?

Mr. EWERT. Yes.

Senator CHAFEE. Well, on that basis, we will go along at a reasonable pace and we will just, unfortunately have to quit at 10:30 unless they give us a reprieve. I'm sorry for that. We will get the second panel in, I am afraid we will not be able to get to the third panel today.

All right, Mr. Harris. No, Mr.——

Mr. HAMM. Hamm.

Senator CHAFEE. Go ahead, Mr. Hamm.

Mr. HAMM. Senator, the issue is not the overcapacity of the industry, and I think it would be improper to raise that as an allegation in this bill.

The issue that I'm raising is the need to fundamentally look at the economic condition of any individual utility, including its overcapacity situation.

The FERC proposal ignores an examination of the individual utilities, and that is the issue that I am raising, not the overcapacity of the industry in general. I agree that that is not the appropriate standard. Let's look at the individual utility.

Of course, let's recognize what's going on here. The utility industry wants the supply—as EEI says in its own testimony, irrespective of financial health; even if we can't show a need we ought to get this extra money.

The question is, the utility industry management doesn't want any one of their individual companies to be specifically pointed out by the financial community and say, ah ha ha, these guys, for whatever reason, bad management or whatever, can't make it and thus the financial markets will react negatively to their particular situation.

The other issue is abandoned plant. In the State of South Carolina, we have over $1.5 billion in abandoned plant in our jurisdiction. In fact, one of the individuals on the next panel is a representative of a company that has some of that abandoned plant. That is also an issue here.

And I agree with the earlier comments whether or not FERC in fact will take aggressive steps on the prudency question I think is open to some speculation, and it ultimately cannot be addressed in this particular piece of legislation. But the fact remains that abandoned plant and overcapacity is an integral part of these construction programs. And again, it is economics of the marketplace that is saying to the industry, we don't think you have done much of a job in your forecast demands, we're concerned about your ability to pay. And these companies are not abandoning these plants because they just decided to stop building, they abandon them because they recognize that due to conservation on the part of the public, those revenues as expected are not coming in.

The public is not paying less out of a sense of patriotism, they're paying less—using less, excuse me—they're paying much more out of a sense of responding to pocketbook economics, your constituents and everyone in this room. That is the issue that's floating around.

The whole question of wholesale ratemaking—you say, well, what in the world is the National Association of Consumer Advocates doing in a matter that involves FERC?

I have yet to be in a State proceeding—and I have been involved over $3 billion worth of rate cases—that we haven't had thrown to us "well, FERC allows us to do this, that, or the other," and for that reason you all ought to let us do this.

So I think it's encumbent on this Congress to take action and make it clear that the status is, yes, utility, if you've got a financial need, you demonstrate it and the public will in fact have to pay more; if you can't make that demonstration, no, we're not going to bail you out of the situation. That is ultimately what the issue is.

I think S. 1069 and H.R. 555 deal with that issue, and I think that that is ultimately what NASUCA is here to oppose, the automatic inclusion of construction work in progress.

[The prepared statement of Mr. Hamm follows:]

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REPLY TO

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Remarks of Steven W. Hamm
President of the National Association of State Utility Consumer Advocates and Consumer Advocate for South Carolina

before the
Subcommittee on Energy Regulation
of the Senate Committee on
Energy and Natural Resources

Legislation to Limit the Recovery by Public Utilities of Certain Costs of Construction Work in Progress Through Rate Increases

May 18, 1984

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Mr. Chairman and members of your Subcommittee:

My name is Steven W. Hamm. I am the Administrator and Consumer Advocate for the South Carolina Department of Consumer Affairs and currently serve as the President of the National Association of State Utility Consumer Advocates (NASUCA). NASUCA is composed of officials in 32 states who are directed by law to represent the interests of consumers of regulated public utility services before regulatory commissions.

I appear before your Subcommittee today to comment briefly on legislation that attempts to limit the inclusion of construction work in progress in a public utility's wholesale rate base. It should be clearly understood that the National Association of State Utility Consumer Advocates opposes any automatic inclusion of construction work in progress (CWIP) in a public utility's rate base. My comments today are intended to address the standards that must be established to insure that the inclusion of construction work in progress, and thus the attendant increase in wholesale electric rates, is absolutely necessary and properly balances the interests of both ratepayers and the public utility involved. To the extent treatment of CWIP at the Federal Level is viewed as a precedent, CWIP methodologies utilized by State regulators may be affected.

As a general principle, the inclusion of CWIP in rate base represents a significant departure from the traditional role of regulation of public utilities. As you are aware, regulation was established to act as a substitute for the competitive marketplace in areas where actual competition was not economically viable. The regulatory process was created to protect the public interest by assuring that prices charged by monopolies were in line with prices that might exist in a fully competitive marketplace. As a practical matter, the inclusion of construction work in progress enables a utility to charge higher rates to its customers prior to the time that the plant is completed and actually generates electricity. The inclusion of construction work in progress in a public utility's rate base allows that utility to shift certain investment risks away from the company and its stockholders and on to ratepayers. As a result, ratepayers would be required to pay a current dollar return on the amount of construction work in progress that is included in the rate base, even though the plant under construction has not provided any may not provide any power to ratepayers.

Inclusion of CWIP in rate base is based on the general assumption that the unit under construction will in fact be completed and be necessary to provide service to ratepayers. Ratepayers should not be asked to pay a return on the millions of dollars invested in generating units that may in fact be abandoned prior to their final completion. For example, electric utilities operating in the State of South Carolina have already abandoned generating plants in which they have invested over one-half of a billion dollars. Ratepayers now find themselves in the position of having paid a partial return on construction work in progress and then being asked to pay even higher rates to allow the utilities in question to recoup part of their investment, despite the fact that the units will never provide any electric service.

S.1069 provides a fairer method of treating CWIP than the current FERC rule of automatically allowing 50% of CWIP, if any of it is to be included in a utility's wholesale rate base. I offer the following observations about this bill on behalf of NASUCA.

1. As currently drafted, S.1069 defines "severe financial difficulty" in specific terms that all parties involved in a FERC proceeding will understand. This provides necessary clarity and it thus should be retained. [Sec. 213(b)(2)(A)]

2. The certificate required in §213(b)(2)(A) must state that the utility "will be in severe financial difficulty" unless CWIP is included in rate base. Since FERC utilizes a future or projected test year methodology in setting rates, it should be understood that the explanation offered by the utility in its certificate may be subject to some margin of error due to faulty

financial and/or construction projections; however, this standard is preferable to not having any requirement of a showing of financial difficulty in order to allow CWIP in rate base. [Sec. 213(b)(2)(A)]

3. Section 213(b)(2)(C) requires a statement explaining assessment of less cost alternatives. The bill properly requires the Commission to make a finding that a generating facility is reasonably necessary at least system cost when compared to alternatives. [Sec. 213(b)(3)(D)]

4. Although at first glance Section 213(b)(3)(E) would appear to condone a degree of mismanagement by still allowing CWIP if other requirements are met, Section 213(d)(4) properly prevents any recovery of costs imprudently incurred, although how well that would work remains to be seen. [Sec. 213(d)(4)]

5. The bill states in §213(b)(3) that after evidentiary hearing the Commission is not to make an affirmative finding that inclusion of CWIP in rate base will alleviate or prevent severe financial difficulty (Sub paragraph B) without clear and convincing evidence on the record to support this finding. NASUCA suggests no findings be made without clear and convincing evidence on the record. [Sec. 213(b)(3)] The sentence should read: "No findings shall be made by the Commission unless such findings are supported by clear and convincing evidence on the record."

6. Under S.1069 the Commission would examine applications for inclusion of CWIP in rate base on a case-by-case basis, so utilities on one hand would not have an unwarranted incentive to engage in excessive building programs. On the other hand, eligible utilities would be given financial relief. Therefore, elimination of jobs for construction of generating plants is not an issue.

This Subcommittee should view with caution any allegation of potential brownouts due to some disincentive for utilities to build plants in a timely manner. The industry's current reserve margins are more than adequate at present,[1] and this bill avoids creating disincentives to build.

Ultimately, the issue before this Subcommittee is whether a regulatory agency like FERC should promulgate rules or practices that automatically create a current need for higher rates without a careful examination of the financial condition of the utility seeking such relief. The burden of proof on the need for including any portion of CWIP should be placed squarely on the shoulders of the utility involved. Any other process cannot serve the legitimate interests of ratepayers who are being asked to pay higher electric rates despite the massive conservation efforts we have seen over recent years.

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[1] See Testimony of Andrew Varley, Chairman of the Iowa State Commission and Chairman of the NARUC Committee on Electricity, before the Subcommittee on Energy Conservation and Power, House Committee on Energy and Commerce, February 7, 1984. Commissioner Varley noted that the electric utility industry has reserve margins in the range of 35-40 percent with 1983 electricity generation statistics running only slightly ahead of 1981 levels.

Thank you for your time and attention. I would be happy to answer any questions on this or other CWIP proposals.

Senator **Chafee**. OK. Thank you very much, Mr. Hamm. Mr. Harris, Independent Virginians for Political Action.

STATEMENT OF DONALD A. HARRIS, ON BEHALF OF INDEPENDENT VIRGINIANS FOR POLITICAL ACTION

Mr. **Harris**. Thank you.

I am Donald A. Harris from Henrico County, outside Richmond. I'm acting as a surrogate for Mr. George Burruss. He represents the Independent Virginians for Political Action, and he has been confined with a heart attack and has asked me at this point to——

Mr. **Chafee**. You will have to summarize your statement, Mr. Harris.

Mr. **Harris**. OK.

On the CWIP situation, we're concerned in the State of Virginia, because 60 percent of the States do not allow CWIP in the calculation of their electric rates. That leaves us with 20 who do, and we understand that 7 have legislation at this point to prohibit its use as of January of this year.

Now, we're concerned from our standpoint down there because we have situations of abandoned plants. As a matter of fact, we have over $700 million in abandoned plants right now, from which we will never see 1 kilowatt of power, and we're paying for it. And the public has very little control over what happens in our particular State as far as ratemaking.

In January of this year, Mr. Burruss and I both testified before the Virginia State Senate, and in the process we had a situation develop where the actual commissioner's representative said we do not want the consumer to have to face a very large increase; in other words, we went to take it through steps. I appreciate what he was saying, but I also know while it's more palatable that way, it is also a gradual tax on the people. And this is the thing that we're concerned with because we have, as I say, abandoned power facilities in the State of Virginia that are being cut up and sold for scrap.

The net result of it is the ratepayers will be paying for many years into the future for something they will never get. And we at this point in time don't know the cause. Management problems? We don't know. We suspect there may be. We can only speculate.

We're concerned because we have no control at this point over the individuals who are making the rates at this point. And, as a matter of fact, we would like to quote one of the experts who testified down there last year in Virginia—if I may quote very briefly:

> While the regulated environment for public utilities does not contain the same economic incentives as for competitive firms, some incentives do exist for utilities to operate efficiently. Unfortunately if the regulatory commission allows a utility to receive a cash return on the CWIP, some of these incentives are diminished. If a utility receives an immediate cash return from its construction projects, the utility tends to be guaranteed at least some return on its investment, regardless of the number or magnitude of management errors made on that project. The relative freedom from regulatory scrutiny and potential disallowance reduces the incentive for efficient management of the construction program.

And that's what I think we have in Virginia. We can't prove it at this point, but this is why we're opposed to CWIP.

[The prepared statement of Mr. Harris follows:]

May 18, 1984

TESTIMONY OF DONALD A. HARRIS, SUBSTITUTING FOR GEORGE BURRUSS, JR., BEFORE THE SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES RELATIVE TO S. 817, S. 1069, AND HR 555

Mr. Chairman and members of this committee:

I am Donald A. Harris of Henrico County, a suburb of Richmond, Va. Acting as surrogate for Mr. George Burruss, Jr., representing the Independent Virginians for Political Action. Mr. Burruss is confined due to a heart attack, and has asked me to thank you for the opportunity afforded us in making this presentation.

We have ascertained that there is a strong movement among the state legislatures and utility or corporation commissions in the various states to adopt measures forbidding the inclusion of cost of Construction Work in Progress (CWIP) in rate bases when establishing electric utility rates.

At present 30 states, or 60% do not allow CWIP in computing electric rates. Of the remaining 20 states who do allow CWIP, 7 had legislation pending to prohibit its use, as of January of 1984. We are not advised as to the number of states that statutorily prohibit CWIP, but we are sure there many who do so, amount the 30 where CWIP is forbidden. The national trend appears to be prohibit CWIP through either statutory law or regulatory practice.

A brief explanation of CWIP as it relates to electric utilities is in order here. In determining rate increases where construction is underway, the construction costs for projects not yet completed and made useful to consumers in power generated and distributed, are factored into the electric utilities' operating costs. When these costs are divided into net operating income the return on such income appears lower than if the actual productive investment were used. Since return on investment is the criterion by which electric utilities (as well as other regulated public utilities) seek to obtain rate increases, a downward distortion thus occurs when CWIP is used, and thus rate increases generally are allowed by the regulatory agency.

In January of this year Mr. Burruss and I testified before the Senate Labor and Commerce Committee of the Virginia General Assembly advocating passage of legislation prohibiting CWIP in Va. After listening to a bevy of witnesses representing all the major utilities in the Commonwealth, we were treated to an interesting discourse by a representative from our State Corporation Commission. He revealed that an assumed net operating income figure is factored into the utilities' income statement to counterbalance the CWIP figures, for as he stated "We do not want the consumer to have to face a very large rate increase". In other words, in Virginia, we are seeing rate increases on a more gradual basis, using assumptions.

On its face this would appear a more palatable way to increase rates, BUT since 1977 we have seen nearly 700 million expenditures for electric power generation which have been passed on to the rate payers in part, after which the generating facilities have been cancelled or sold for scrap. As a result, Virginia consumers will, for many years into the future, be paying for plant and equipment which will never produce one Kilowatt of electricity.

We can only speculate as to the causes for the cancellation of these nuclear facilities---were there errors in judgement by management? Or did the Three Mile Island sabotage create an aura of fear, culminating in the wholesale abandonment of nuclear energy throughout our republic, while foreign nations continue to build fission units? Or were the units, like the Gull Island oil deposits, closed down by faceless bureaucrats, perhaps under orders to increase our dependence upon foreign sources of supply? We will never know, but for the moment we will attribute these cancellations to the mistakes of management, for there have been a number of visible errors on the part of our major electric utility; and the people have been virtually powerless to halt the rate increases.

We would like to quote one of the experts who testified before our Corporation Commission in 1983 relating to a proposed rate increase:

> "While the regulated environment for public utilities does not contain the same economic incentives as for competitive firms, some incentives do exist for utilities to operate efficiently. Unfortunately, if the regulatory commission allows a utility to receive a cash return on its CWIP, some of these incentives are diminished. If a utility receives an immediate cash return from its construction projects, the utility tends to be guaranteed at least some return on its investment, regardless of the number or magnitude of management errors made on that project. The relative freedom from regulatory scrutiny and potential disallowance reduces the incentive for efficient management of the construction program."

The Citizens Utility Board of Wisconsin, established by law, had this to say about CWIP in their 1981 report:

> "CWIP, by permitting utility companies to earn a return on a utility plant which is under construction, but not yet in operation, greatly reduces the risk factor faced by utility management in undertaking massive construction projects and, therefore, reduces the incentives to management to be sure the plants under construction are truly needed, or that the costs are being kept low, or that the construction project is proceeding on schedule."

It is interesting to note the argument advanced by proponents of CWIP relative to its use in guaranteeing financially strong utilities. The Illinois Public Action Council, a consumer organization in that state, reported that disallowance of CWIP in their rate base has not resulted in financially weakened utilities, and bond ratings are not lower. A review of bond ratings for 1979 in those states allowing CWIP as opposed to those forbidding CWIP shows little correlation to the effects of permitting CWIP. In fact, the First Boston Corporation reportof June 1980 using 1979 revenues shows our own major utility, Virginia Electric and Power Company with a bond rating of "A", while Martin Weiss' book "The Great Money Panic", published in early 1981, indicated that our hometown utility, VEPCO, had in 1979 over four thousand times LESS liquidity than Con Edison had in 1973! So much for bond ratings vis-a-vis CWIP.

An examination of the bills proposed to limit CWIP leads us to the conclusion that S. 817 is far preferable, in that it allows for no variation from its intent---that of prohibiting CWIP except for (A) construction of pollution control facilities or (B) conversion of oil or gas-fired facilities, and even these two exceptions are questionable lest some bright lad or lass choose to interpret the exceptions in other than their obvious meaning.

Senator **Chafee**. Thank you very much.

I think one important point that will, I'm sure, come up when the industry testifies is they will be talking about the time value of money, but I don't think in their calculations they figure in the time value of the consumers' money. You add up all the consumers and the time value of their money, you're talking a few dollars as well.

Thank you all very much.

I'm going to review your testimony—Senator Warner has just come in—but I will review your testimony carefully.

What I'm going to do now, Senator Warner may have a question of his fellow Virginian, but unless he does I'm going to take the third panel next, because some of them involve university professors and, by definition, they're impecunious, so [laughter].

Senator **Chafee**. I don't want them to have to come back again.

Senator **Warner**. Mr. Chairman, I thank you for the momentary recognition. I have been chairing another markup in the armed services since 7:30 and I'm sorry to be late. This is an important hearing. And I, like you, I will carefully evalute the testimony of all witnesses, and express appreciation to those who have taken the time from their important responsibilities to share their views with the committee this morning, particularly my colleague from Virginia.

Thank you, Mr. Chairman.

Senator **Chafee**. Thank you, Senator Warner.

Senator **Warner**. I know you have a time constraint of 10:30 on your hearing.

Senator **Chafee**. We do.

Thank you all very much.

Let's take the next panel, Mr. Matson, Mr. Wheatley, Mr. Nathan, Mr. Bagge, Mr. Brown—Dr. Brown, Dr. Ewert.

Let's start with the professors.

Dr. Ewert of Georgia, we're aware of your coming a long ways, I think, on your own undoubtedly. So why don't you go on right ahead and we won't miss a beat here. And next will be Dr. Brown. We're going to hustle right here. Go to it.

Now, let me just say to the second panel, I regret that we're not going to be able to fit you in, but you indicated that you could come back, and I think it's better for me to take this panel because then, from the presentation they make, then I can ask questions of what would be the second panel.

So I apologize that the time factors have worked out this way and we will let you know when to come again.

Senator **Warner**. Mr. Chairman, that's wise, because the second panel will require us to go into some depth in their testimony and it would take more time than we have for the moment.

Senator **Chafee**. That's what I thought.

All right, Dr. Ewert from Georgia.

STATEMENT OF DR. DAVID C. EWERT, PROFESSOR OF FINANCE, GEORGIA STATE UNIVERSITY

Dr. **Ewert**. Thank you.

I'm at Georgia State University. I have taught at Purdue University. I have testified before the Federal Power Commission and FERC over the last 10 years—more than that, in dozens of cases. I have also been involved in the Ogelthorp Electric Power Corp.'s purchase of Hatch II and Hatch I, a billion and a half dollars worth of purchase by the Rural Electric Coop.

The comments that I would like to address are two points; one, the record financial health of the industry, and the second, to the diminimous effect that the FERC treatment can have on problem situations; that is, in changing a company's overall bond rating, coverage ratios. But while it may have a diminimous effect on them, it can have a very serious effect on the customers.

The blanket automatic treatment, it seems to me, not warranted at a time when their financial health is at an absolute record for the industry.

There are numerous indicators of financial health. Let me go through a few of them rather quickly. The return on equity. The Business Week Public Utility, May 10th, reported 14.5 percent, and said this is the all-time record return on equity that the industry has ever earned for a calendar year or for any 12-month period.

In comparison, Business Week Corporate scorecard recently reported that the industrials had from 1983 a return on equity of 10.7 percent.

So the public utilities, electric utilities have out-performed the industrials as a whole.

Not only is it a strong rate of return on the equity, the equity base is at an all time—not an all-time high, but it's been over two decades since the proportion of common stock equity in the capital structure has been large. The Public Utility Fort Nightly reports 40.1 percent of equity in the total capital structure.

Coverages ratios for the industries——

Senator **Chafee**. OK, Dr. Ewert, we have got others coming and the time is clicking. We will put your testimony in.

Your point is that the industry is doing very well.

Dr. **Ewert**. Yes, it has, and the stock market is much more sophisticated and segment their response. It is a three-tier industry now in comparision to the stock market's reaction to Con-Ed in April of 1974 to the Three Mile Island in March of 1979, in the recent hoops you see that instead of a blanket treatment by the investors, a much, much more sophisticated, much more selective.

So there are problem children. A case-by-case solution may be appropriate for the problem children within the industry that are very newsworthy, but across the board, the industry has record peak.

The concluding statement—knowing we need to hurry on—I guess it's the thrust that I see, that like an elected official who proclaims their achievements when seeking reelection, the industry is proclaiming its achievements. They have had a record year. More newsworthy, however, has been the play-up of some of the difficult situations and some of the problems.

Looking at the industry data that I have quoted by the same people that speak against your bill, I am afraid that sometimes industry spokesmen may not say and recognize the same things in two forums. When they're talking to the investors, they proclaim their achievements. I find sometimes in this hearing, that's lacking.

Thank you.

[The prepared statement of Dr. Ewert follows:]

Statement
of
Dr. David C. Ewert
Professor of Finance
Director of Executive MBA Program
Georgia State University
Atlanta, Georgia
on
S. 817, S. 1069, and H.R. 555
The "Construction Work in Progress Policy Act of 1983"
before the
Subcommittee on Energy Regulation
Senate Committee on Energy and Natural Resources

May 18, 1984

My purpose is to speak about the healthy financial status of the electric utility industry, the inappropriateness of a blanket policy of including CWIP in rate base, and in favor of S. 1069 and H.R. 555.

I am Professor of Finance and Director of the Executive MBA program at Georgia State University in Atlanta. Since 1974, I have testified in numerous Federal Energy Regulatory Commission (and Federal Power Commission) proceedings and state proceedings relative to the treatment of CWIP and to utility financial issues generally. I was awarded the Ph.D at Stanford University, the M.S. at the University of Minnesota, and the B.S. at Iowa State University; and I have taught at San Jose State University and Purdue University, as well as at Georgia State University.

RECORD YEAR FOR ELECTRIC UTILITIES

The electric utility industry had a record year in 1983. Public Utilities Fortnightly, in its May 10, 1984 edition, made the following observation:

> All of the major utility financial ratios showed improvement in both the fourth quarter and the calendar year. The industry return on equity once again established a new record for both a 12-month period and a calendar year. The return edged up to 14.2 percent for calendar 1983 from 14.1 percent for the 12 months ended September, and 13.5 percent for 1982, the previous records for a 12-month period and calendar year. pp. 46-47. (emphasis added.)

The article goes on to explain that the current return on equity of 14.2 percent "... is far above the levels achieved during the 1960's, when the electric utilities enjoyed the benefits of declining unit costs and extremely healthy financial trends that made them favorites of the investment community." Id.

The good news for the industry includes not only its record return on equity, but also stronger equity ratios, coverage ratios, percentages of internally generated funds for construction, and cash positions.

At year end 1983, the industry had 40.1 percent of its capital structure provided by common stockholders. This means the average for the industry is within the optimal financing mix suggested by the New York Public Service Commission of 40 to 45 percent as very healthy. A recent phenomenon, in fact, is that several electric utilities now have too much financing from common stockholders. Consolidated Edison Company of New York has an equity component of 55 percent, and has discussed plans for reducing its outstanding common stock by repurchasing its own shares. Electric utilities generally are not suffering from too little equity financing and, in fact, some have excessive equity.

Currently, the utility industry's coverage ratio (earnings before interest and taxes divided by interest payments) is 2.95 times. According to Public Utilities Fortnightly, this coverage ratio is the highest in over a decade (Id., p. 46.). This is remarkable given the higher interest rates the utilities now pay on their bonds. Higher interest payments mean earnings must have increased even faster to achieve the high coverage ratios now being realized. And high coverage ratios indicate the industry is in a strong position to issue additional debt to finance future construction.

Bond ratings are another indication of financial strength. During the 1970s, bond ratings (assigned by Moody's and Standard and Poor's) often declined. But downratings are not a one-way street; indeed, during the 1980s, there have been a number of upgradings. Earlier this year, three Wisconsin electric utilities were given the highest rating, Triple-A. Moody's acknowledges that a Triple-A rating is "gilt-edged."

Some suggest, however, the financial performance of electric utilities does not provide an accurate representation of the industry's standing during the past several years. A year ago, Michael Foley, Director of Financial Analysis, National Association of Regulatory Utility Commissioners (NARUC), commented:

> Utility observers who decry the performance of the electrics would be well advised to examine Business Week's November, 1982, "Corporate Scoreboard" which reviews the sales and profits of some 900 firms in 39 industry classifications. Extracting from the earnings data...ending September 30,1982..., from the scoreboard and comparing it with the Salomon Brothers index of 100 electrics...it is readily observable that the return on common equity earned by the nation's electric utilities compares favorably with the returns earned by other industries. While 13 industry groups scored higher than the electrics, 25 scored lower. Other highly capital-intensive industries such as the automobile and steel companies have plunged to depths never experienced by the nation's electric companies. "Electric Utility Financing - Let's Ease Off the Panic Button," Public Utilities Fortnightly, January 6, 1983, p. 21. (emphasis supplied and in the original.)

Industry	*Return on Common Equity Twelve Months Ending September 30, 1982*
1. Beverages	21.2
2. Oil Service and Supply	20.7
3. Tobacco	20.6
4. Drugs	19.1
5. Publishing and Broadcasting	17.5
6. Cosmetics	17.2
7. Food and Lodging	16.7
8. Leisure Time Industries	15.4
9. Electrical, Electronics	15.3
10. Office Equipment, Computers	15.1
11. Service Industries	14.5
12. Natural Resources	14.4
13. Food Processing	14.3
14. ELECTRIC UTILITIES*	13.8
15. Retailing (Food)	13.7
16. Banks and Bank Holding Companies	13.3
17. Nonbank Financial	13.0
18. Conglomerates	12.8
19. Aerospace	12.6
20. Instruments	12.4
21. Trucking	11.7
22. Misc. Manufacturing	11.3
23. Retailing (Nonfood)	11.0
24. Textiles	10.4
25. Chemicals	9.8
26. Railroads	9.6
27. General Machinery	8.4
28. Appliances	7.4
29. Paper and Forest Products	7.0
30. Tire and Rubber	6.2
31. Containers	5.1
32. Real Estate and Housing	4.2
33. Special Machinery	3.8
34. Building Materials	1.4
35. Metals and Mining	−1.0
36. Automotive	−2.8
37. Steel	−2.8
38. Airlines	−4.6
39. Savings and Loan	−19.0

In addition, Foley noted the following study by Duff and Phelps, a public utility investment research firm:

> (They) conducted an extensive analysis of electric utility total shareholder returns (market price change plus dividends) for 66 possible holding periods from 1970-81 and compared these returns with the returns paid by the Standard and Poor's index of 400 industrial corporations. The Duff and Phelps research documents that equity holders of the 105 largest electric utilities earned a compund annual shareholder return of 7 per cent while the more risky S&P index of 400 industrials returned 7.21 per cent on average for the theoretical 66 holding periods....
>
> Interestingly, the Duff and Phelps electric utility index actually *outperformed* the S&P industrials by providing a *higher* shareholder return during *34 of these* holding periods while the reverse was *true* in 32 instances. For example, the most recent holding period examined...is the 12 month period of calendar 1981 during which the 105 electrics had an average shareholder return of 21.3 per cent while the S&P industrials had a negative return of -6.5 per cent. *Id.*, p. 22. (emphasis in the original.)

The current healthy status of the utility industry is not a short-run phenomenon. Generally, investors in common stocks are buying an investment with no maturity date; that is, a very long-term security. Whether an investor holds a common stock for a short or long period, the next buyer is buying a long-term security. For this reason, common stocks are recommended as "buys" to investors because the financial future looks healthy. (See recommendations to buy from Salomon Brothers and E.F. Hutton among others.) In the case of electric utilities, the stock market is not myopic and not overly concerned with one year's performance such as 1983, but is future-oriented and is aware of demand and construction forecasts for the 1980's and 1990's. Most certainly, the securities houses recommending "buys" have analysts well aware of industry trends.

Electric utilities are increasingly able to finance their construction programs through internally generated funds such as earnings and depreciation. During 1983, Salomon Brothers reports that 49.3 percent of the industry's construction needs were financed internally. ("Stock Research: Electric Utilities," April 19, 1984). This is a significant improvement for the industry over 1982 when 42.9 percent of construction funds were internally generated. The trend will continue for the forseeable future. Salomon Brothers indicates that in 1984, internally generated funds are expected to be 54.5 percent and, by 1986, the figure is likely to be approximately 75 percent. These figures are characterized as "very healthy" and they demonstrate that electric utilities will have a reduced need to issue stocks and bonds to finance future construction.

In addition, Salomon Brothers' report sees utility construction programs decreasing. Construction expenditures actually decreased, albeit slightly, in 1983. The reduction in construction is part of a trend that the investment firms expects will continue through 1986.

THE SEGMENTED UTILITY INDUSTRY

The electric utility industry has often been viewed as a very homogeneous group. This is no longer true. As the investment firm Goldman Sachs acknowledges today, the industry has become segemented into three groups -- firms with reduced construction programs using fossil-fueled generating units; firms with reliable nuclear plants in service; and, finally, firms with nuclear plants under construction.("Electric Utilities and the Nuclear Issue," February 7, 1984). Numerous other financial service firms, including Duff & Phelps, E.F. Hutton, Merrill Lynch, and Salomon Brothers, classify the industry similarly.

On the one extreme are those firms with problems created by much delayed and costly nuclear projects. The only electric utility companies with their senior bonds judged to be below investment grade by Moody's (Ba or B bond ratings) are in this category. According to Salomon Brothers, these utilities include Cincinnati Gas and Electric, Consumers Power, Long Island Lighting Company, Public Service of Indiana, Public Service of New Hampshire and General Public Utilities.

These problem companies, of course, receive more news coverage than the typically strong firms. While problems do exist for a few firms, overall, the industry is again experiencing record financial performance. The industry average ratios cited in the previous section are for the entire industry, including firms having problems with nuclear plants.

Equally significant, Wall Street is becoming increasingly sophisticated in its evaluation of electric utilities and sensitive to the financial circumstances of individual companies. Today, when one firm has a problem, the whole industry suffers less. Consider these three important events in the financial history of the industry -- 1974, Consolidated Edison of New York (Con Ed) skipped a dividend; 1979, the Three-Mile-Island incident; and, 1983, the Washington Public Power Supply System (WPPSS) default on its bonds.

In 1974, when Con Ed passed its quarterly common stock dividend, stock prices for the industry as a whole fell dramatically. After the shock of unexpected news passed, the industry's average stock prices rebounded, gaining approximately 50 percent in 1975. The securities market was sophisticated enough to recognize Con Ed's financial performance when it improved. In fact, Fortune reported recently that Con Ed was the number one ranked utility in terms of total returns earned by its investors during the period 1973-1983. Its total return of 20.17 percent was even greater than the 10.32 percent return provided by American Telephone and Telegraph. Energy Daily, May 29, 1984, p. 2. A problem situation can be corrected and the affected company can again be well received by investors.

When the Three-Mile-Island incident occured in 1979, the stock market reaction was more selective than it was in 1974. In that year, stock prices fell the greatest for firms with nuclear programs, especially those having generators from the same manufacturer as that used in Unit #2. However, investors quickly realized that the problems occurring at Three-Mile-Island were not being experienced by the entire industry.

The 1983 default on WPPSS bonds, again, did not indicate to the investors that the industry as a whole was in difficulty. Actually, there is evidence that investors could correctly identify the source of WPPSS' problem. Snohomish County Public Utility District was one of the power systems which was relieved from its obligation to pay for the two terminated WPPSS nuclear plants by the Washington State Supreme Court. Within five months of the WPPSS default, the public utility district issued $241 million in bonds. While the yields on these bonds may have been 0.50 to .75 percentage points higher than had WPPSS not defaulted, the fact is the municipal utility was able to finance a hydroelectric project under construction.

The Weekly Bond Buyer, November 21, 1983, had this comment about the "controversial" sale of these bonds:

> The Snohomish deal was able to sell at significantly lower interest rates and was more favorably received than many underwriters had indicated.

Even in the controversial milieu surrounding the default on WPPSS's bonds, investors were able to understand where there were no problems. They bought $241 million of the Snohomish bonds and financed a needed project.

In contrast, the Commission's actions implementing its CWIP rule reflect a very simplistic understanding of the industry's financial condition. Careful examination of Order No. 298 indicates that the Commissioners believed the entire industry had been and continues to be in dire straits. As I indicated above, this was not the case when the order was issued last year, it is not the case today, nor is it expected to be in the future. Granted, some companies were experiencing financial problems. But merely giving them an arbitrary fixed percentage of CWIP is not necessarily going to cure their ills. The proper approach, as Wall Street recognizes, is to evaluate the financial needs of each company individually and tailor the required rate relief to those specific circumstances.

CASH POSITION FOR ELECTRIC UTILITIES

Placing CWIP in a utility's rate base primarily affects its cash position or liquidity. Profits are not affected much because, when CWIP goes in rate base, earnings from AFUDC cease.

While CWIP in rate base improves cash flow for private utilities, it is useful to see whether the industry actually needs this monetary infusion today. *Fortune*, April 30, 1984, entitles an article, "A New Power-Company Problem: Too Much Cash." A number of companies have eliminated programs for automatic reinvestment of dividends into common stock. Just three years ago, Congress gave beneficial tax treatment to these plans, and now companies are voluntarily dropping them because they neither need the cash, nor want to issue more common stock. The favorable tax treatment, used to help what some judged in 1981 was a weakened industry, expires in 1985. In part because of the current robust health of the industry, the Senate approved a provision in its tax bill ending this favorable treatment in 1984. This new expiration date is now being debated by House and Senate conferees.

Leonard S. Hyman, Vice President of Merrill Lynch, recently commented:

> Today, many utilities could become so cash-rich that they would even look upon dividend reinvestment plan as *liabilities.* "The Challenge of Excess Cash," *Electrical World*, February 1984, p.81.

Hyman's article and two others were part of a special advertising section entitled "Electric Utilities' Cash Opportunities," contained in the above-cited edition of *Electrical World*. Purchasing six pages of advertisement provides a useful insight into the thinking of financial institutions such as Merrill Lynch. In its opinion, and those of the other advertisers, the electric utility industry generally is not suffering from an inability to get needed capital for its construction programs.

CONCLUSION

The financial ratios confirm, without a doubt, the healthy financial status of the electric utility industry. 1983 was a *record* year and future forecasts are favorable. A blanket, automatic regulation which increases rates to customers and cash flow to electric utilities is unwarranted. Today, company officials are frequently proclaiming the financial successes and performances of their companies publicly to many audiences, but not to the members of this subcommittee.

As an example, William McCollam, President of the Edison Electric Institute, spoke before the New York Society of Security Analysts and cited these improvements in his industry's financial condition:

-- actual earned return on equity averaged an estimated 14.2 percent in 1983, as compared with 13.6 percent in 1982, and significantly higher than the 10.6 percent in the low year of 1974;

-- 93 dividend increases were announced last year, compared with 91 in 1982 and the low of 45 such announcements in 1974; and

-- pre-tax interest coverage of 3.02 times was above the 1982 level of 2.77 times.

Further, to summarize in someone else's words, rather than mine, how well the industry is doing, E.F. Hutton says:

> But these examples five firms with cancelled nuclear projects are at one extreme of the spectrum of electric utilities. We would like to call attention to investment opportunities at the opposite end of the spectrum: companies with fortunes much more firmly under the control of their managements and with traits that have traditionally made utilities attractive investments. These companies have either completed or are in the final stages of constructing all the electric generating capacity they will need in the foreseeable future. As a result, their capital expenditures have declined dramatically or are in the process of doing so. Their needs are being supplied entirely or in great part by internally generated cash, so they have little or no need to sell additional securities.
>
> Thus, with flattened capital costs and with the recently completed plans included in their rates, these utilities stand a much better chance of earning allowed returns than in the past. The need for rate increases, always a sore subject, has been mimimized. The improved cash flow has strengthened their balance sheets, and some are now in a position to consider diversifying into nonutility businesses and/or repurchasing some of their outstanding shares. Thus, despite the spate of bad news about utilities that has filled the press lately, there are indeed high-quality investment opportunities in the group, in our opinion. ("Taking Stock of Electric Utilities").

To the extent there are five or more companies having financial difficulties caused by nuclear projects, or other difficulties, CWIP can and should be evaluated as effective and appropriate only on a case-by-case basis. The entire industry is not in financial difficulty. Even when the industry was judged to be in financial need by Congress in 1981, the favorable tax treatment given to the industry's common stockholders was for a limited time. Today, the industry's experience is that a number of firms no longer have dividend reinvestment programs and Congress is debating whether the programs should expire in 1984, rather than next year.

Placing CWIP in rate base can injure wholesale customers greatly while providing little cash for the industry. FERC's jurisdiction accounts for slightly over 10 percent of the revenues collected by the electric utilities. With the strong financial position of the industry, it is unlikely that state regulatory commissions will increase the amount of CWIP allowed, if any, in rate base. In fact, the trend appears to be going in the opposite direction from taken by the Commission. FERC practices will have a neglible effect on total electric utility revenues and the financial position of the industry, but a very large impact on wholesale customer rates. On a case-by-case basis, both state and federal authorities can use CWIP in special situations where it is needed.

Wall Street recognizes the segmented nature of the industry, and the problems being created by construction of new plants are not and will not be experienced industry-wide. The inclusion of a standard percentage of CWIP in the rate base is simplistic and inappropriate. FERC's regulations should recognize the diversity within the industry.

The officers of electric utilities commonly and frequently point with pride to their financial achievements, and rightly so. Their annual reports and presentations to security analysts are filled with measures of their healthy financial status and the future prospects. However, in a forum such as this hearing, these comments are seldom made and very bleak futures are often portrayed.

When the private utilities come before this subcommittee, I think it is important to keep these improvements in their financial position in mind and balance them against FERC's arbitrary, automatic allowance of CWIP. I believe you will conclude that CWIP is best treated on a case-by-case determination of utility financial need. This is the approach embodied in S. 1069 and H.R. 555 and, therefore, I urge the members of the subcommittee and the full Senate to give these bills their favorable consideration.

Thank you for this opportunity to appear before the subcommittee.

Senator **Chafee**. Thank you, Dr. Ewert.
Dr. Brown.

STATEMENT OF DR. GILBERT J. BROWN, PROFESSOR, MECHANICAL AND ENERGY ENGINEERING, UNIVERSITY OF LOWELL

Dr. **Brown**. I guess it wouldn't be wise to read my statement under the time constraints, but there's sort of a basic philosophy that I'd like to put out that deals with the issue of CWIP, and it's essentially the old Fram TV commercial of "pay me now, or pay me later."

In an ideal situation it really shouldn't matter whether we defer or capitalize the interest costs, add them up and put it all in the rate base in one feld swoop.

You have to recognize what that's going to mean. That is just going to exacerbate rate shock, because now you have tremendous investment all at one time, all being capitalized. But what CWIP would do is tend to ramp that a little bit and put some of the interest costs, the cost of capital into the rate base in an ongoing way and minimize the rate shock.

You see, what distresses me as an engineer is—well, I guess what we teach in thermodynamics is that you can't get something for nothing. And we have the second law of termodynamics that we have to live with, and it's in that context that CWIP would make sense with the right set of boundary conditions; and that is, what is going to be cheapest for the consumers in the long run.

You made the statement that the time value of the consumers' money is not taken into account. And I'm not sure about that, but clearly it should be taken into account.

And it's in that context that what would minimize the cost to consumers is what should be done. It's my opinion that CWIP can do that, and the reason it can do that is that what's happening now is because of the wrong ratios of revenues, if you will, to expenses, bond ratings keep getting reduced and reduced, and that has, you know, an effect over the across-the-board utility financing structure.

I think it's that second order effect of the perception of deteriorating economic health, if you will, that's what is hurting the consumer.

So we're all in this together. What's good for the consumer—I hate to sound like another statement, but we should all have the same vested interest, and in this situation, what's good for the consumer should also be—might be CWIP, which might be interpreted as being good for the utilities.

[The prepared statement of Dr. Brown follows:]

Statement of
Dr. Gilbert J. Brown
Professor of Mechanical and Energy Engineering
The University of Lowell
before the
Subcommittee on Energy Regulation
Committee on Energy and Natural Resources
United States Senate

May 18, 1984

Mr. Chairman and members of the committee, I appreciate the opportunity to be here today to share my views on CWIP. My name is Gilbert Brown. I am a full professor in the Mechanical and Energy Engineering Department at the University of Lowell. I am not a utility manager or an economist. I have followed the development of this issue as a consumer and an engineer. As an engineer, I would rather deal with working systems than with abstract concepts. I like to see how concepts actually perform in an integrated system.

The system we are talking about here today--the production of electricity--is extremely complex and delicately balanced. What you are trying to decide is how to make the system work most efficiently.

The truth is that power plants cost money to build and someone has to pay for them. In my opinion, *who* pays is not the question. Whether CWIP is included in the rate base or not, all of us, as consumers, pay the total cost of construction and financing. The difference is *when* it is paid. It is in the best interests of the consumer, then, to keep the total cost as low as possible. Allowing CWIP in rate base should achieve that goal, and thus it makes good sense from the consumer's point of view, regardless of such considerations as the financial condition of individual utilities or the particular technology used to generate electricity.

Inclusion of CWIP helps the utilities by easing the burden of financing during the increasingly long construction periods involved in building any large-scale power project today. It leads to a proportionate reduction in the use of allowance for funds used during construction (AFUDC), which means that the utility is having to borrow less money against a future benefit in order to pay, in many cases, the dividends that will attract investors necessary to complete capital projects.

The use of AFUDC worked well when new plants increased efficiency and were built in a relatively short period of time, thereby lowering the rates for electricity. But we cannot expect the same type of improvement today. We are approaching the theoretical limits of efficiency in our production of power. Construction, operating and financing costs continue to rise and lead times continue to increase. The use of AFUDC is no longer an efficient mechanism for financing new projects. Furthermore, AFUDC lulls the public by maintaining lower rates today in exchange for tremendous rate shock tomorrow.

One criticism of allowing CWIP is that it shifts the risk of plant construction from the investor to the consumer. More accurately, the most it can be said to do is to share the risk. This risk-sharing makes sense. Utility commissions regulate rates and set legal limits on return, but they cannot force investors to put money into a project. This would not matter if the service were non-essential; the product would stand or fall on its own in the marketplace. But that is not the case here. Electricity is essential, and the business of providing it is highly regulated, so normal market forces cannot be applied here. If we insist on regulated rates, we should be willing to share in some of the financial risks.

To me, it would make good sense to include 100 percent of the financing cost, or even part of the project cost itself, in the rate base, if it would result in lower cost to the consumer. However, excluding CWIP drives the cost of capital up and serves as a disincentive to build the power projects that we are inevitably going to need. Since we are going to have to pay sooner or later, if paying sooner will reduce the total cost, then we should be willing to do it.

I do not see the validity of arguments that portray CWIP as unfair to the elderly or to mobile people such as college students, who may not be around to benefit from the power produced by a particular project. All of us have a social obligation to replace what we are using up. We benefit everyday from schools and parks and streets that were, more than likely, built by past residents without any direct expenditure on our part. This is the benefit of living in society, and it comes with a corresponding obligation to extend it to future residents.

I have also noticed that the discussion of CWIP gets tangled up with the whole nuclear debate, as though CWIP would not matter for plants using any other technology. This is not true. Coal plants are running into regulatory problems similar to those that hit nuclear; they are taking longer to build and their costs are going up accordingly. And plants using the so-called alternative technologies, like solar, have per unit costs that greatly exceed those of nuclear. The CWIP issue needs to be settled outside of these other debates.

The system cannot work well unless all of its parts are functioning properly. Allowing utilities to recover financing costs as they are incurred would provide a little oil for a part that is really beginning to squeak. Consumers, regulators and investors are not, or should not be, at odds. Their interests overlap. Under the present regulatory system, what lowers the cost for the utility also lowers the cost for the consumer.

The problem we have in accepting it is, to a large extent, psychological. We have not had to pay in the past, and we do not really want to pay now. After all, living costs have increased for us, also. But we cannot duck the new reality; we can either pay now or pay later. If we pay later, we will pay more and the increase will come on more abruptly. I would rather pay now.

Senator CHAFEE. What do you say to the point that we make in our legislation that you can have CWIP under our legislation?

Dr. BROWN. Well, in——

Senator CHAFEE. But not universally across the board, but under certain situations, CWIP is available.

Dr. BROWN. Well, it's my understanding from what I have read and from some other testimonies and what I know about the bill that it's really not a blanket ticket for CWIP.

Senator CHAFEE. That's right.

Dr. BROWN. In your bill or in the FERC ruling.

Senator CHAFEE. No. The FERC is a blanket 50 percent.

Dr. BROWN. I believe that's a maximum, sir, and there has to be a due-cause justification that the path that the construction is pursuing is indeed going to lead to the lowest cost to the consumers. It also has a window of 6 percent increase on the rates, current rates. And there's some other checks and balances in the current FERC ruling— again, that's my understanding.

You know, there's another issue that's one of philosophy as well, and that is—and it was voiced quite eloquently by the woman representing the senior citizens I believe; but, in essence, we're all living—we're all in this building now that was built by our predecessors, and we're using electricity now that was generated by plants that were built probably before I was born—and some plants were built in 1913, which is before a lot of us were born.

And that's why the new plants, of course, cost more. A new car costs a lot more today than it did 10 years ago. And it's in this environment that we have to pay for what we're going to leave behind. It's imprudent to use up the resource now and not be building for the future.

I can go on, but—I live in a very nice part of the country in the Northeast, and in particular, my university is in the same town that Dr. Wang has his headquarters for Wang Laboratories, so our particular region of the country has survived the last 5 years or so in very good health economically and financially.

Consequently, the growth rate of construction, the electricity growth rate, all of that is very high, and we need the power to maintain this economic health.

Senator CHAFEE. Thank you very much, Dr. Brown.

Let's take Mr. Matson.

STATEMENT OF WILLIAM F. MATSON, PRESIDENT, PENNSYLVANIA RURAL ELECTRIC ASSOCIATION

Mr. MATSON. I have submitted a statement and I would like to just highlight a couple of points in the statement.

First, that the FERC rule on CWIP is not adverse for rural electric cooperatives in Pennsylvania and New Jersey, who will have another $64 million in their electric bills. That's from our personal point of view, and I wanted to bring that out.

Second, that although that $64 million of forced investment that our consumers will have to make under the FERC rule is significant to them, it is quite insignificant to the private power companies in which the enforced investmen will be made.

And you have heard more about that and I won't go into that.

Third, the first investment our consumers would have to make in the private power companies will undermine the competition in the electric utility industry in Pennsylvania, and probably throughout the rest of the Nation.

This will occur for two reasons: First, because of the State legislation enacted in Pennsylvania and other States, as you have heard this morning that keeps CWIP from coming in. And that means, of course,that any municipal or rural electric cooperative would not—would be less competitive—be put in a less competitive position than they presently are.

In some parts of Pennsylvania today the rates charged by rural electric cooperatives are double those charged by neighboring electric utilities. That has happened for a number of reasons, but the FERC thing would exacerbate that, again, to the tune of $64 million just for the rural electric consumers in Pennsylvania.

The demise of the nonprofit, consumer-owned rural electric and municipal electric systems will eliminate the yardstick by which the performance of private utilities can be measured.

And fourth, in this last decade, over 100 powerplants have been canceled or deferred, and you have heard about that.

Despite—a fifth point, despite the fact that Pennsylvania is the home of the power companies that own Three Mile Island, it also is the home of some power companies that are doing quite well financially.

The April 17, 1984, headline of the Energy Daily for Utilities 1983 was a very good year, definitely applies to several power companies in the Commonwealth; for example, PP&L enjoyed profits in 1983 that were 23 percent higher than they were in 1982, and the profits of the Philadelphia Electric Co. were up 30 percent last year.

Senator CHAFEE. OK. I think we have got all of that in your statement. Is there anything else you want to put in?

Mr. MATSON. Only a kind of a personal observation.

When you have your 50th birthday you have an opportunity—to look down both sides of the mountain.

It occurred to me that for someone who is 50 years old and a plant starts and CWIP is put into the rate base of the rates that they're paying, that they will be paying probably for the next 15 years to get that plant online, at age 65 they retire and move to Florida or somewhere and never have the use of that plant in which they have made an investment. And to compound their bad luck, they might very well move into an area where a new plant is being started and for the next 15 years they can pay CWIP again, and will have paid for 30 years for plants which they never had an opportunity to get any benefit from.

[The prepared statement of Mr. Matson follows:]

STATEMENT BEFORE THE COMMITTEE

By:

William F. Matson

President, Pennsylvania Rural Electric Association
Executive Secretary, Pennsylvania Municipal Electric Association

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

S. 1069 and H.R. 555, legislation that would prohibit the
automatic inclusion of construction work in progress
in wholesale electric rates

May 18, 1984

Mr. Chairman, my name is William F. Matson. I am the President of the Pennsylvania Rural Electric Association and of the bulk power supplier of the electric co-ops in Pennsylvania and New Jersey, Allegheny Electric Cooperative. The 14 non-profit, consumer-owned rural electric cooperatives that comprise our Association serve over 600,000 members. I am also the Executive Secretary of the Pennsylvania Municipal Electric Association, an organization that represents the interests of the Commonwealth's 34 local publicly-owned municipal electric systems.

During its consideration of S. 1069 and H.R. 555, this Committee has heard much general discussion regarding the impact on consumers of the inclusion in wholesale electric rates of the costs associated with construction work in progress (CWIP). In the brief time allocated to me this morning, I would like to take a different tack and discuss the impact of CWIP specifically on the consumers I represent.

First, if the FERC rule on CWIP is not reversed, rural electric cooperative members in Pennsylvania and New Jersey will unnecessarily pay an additional $64 million on their electric bills through 1996. This $64 million would represent the forced investment that these consumers will have to make in new generating facilities that may or may not ever serve them.

Second, although the $64 million forced investment that our consumers will have to make under the FERC CWIP rule is significant to them, it is quite insignificant to the private power companies in which the forced investments will be made. Revenue received from rural electric cooperatives represents only 2.3 percent of the total revenue of the private power companies of Pennsylvania. The revenue the power companies receive from the Commonwealth's municipal electric systems represents an even smaller proportion of their total revenues; only eight-tenths of a percent. It is easy to see, therefore, that the extra revenue the power companies stand to receive under the FERC CWIP rule will not substantially influence their go/no-go decisions on future power plant investments.

Third, the forced investment our consumers will have to make in the private power companies will undermine competition in the electric utility industry in Pennsylvania. This will occur for two reasons: First, because of state legislation enacted in Pennsylvania two years ago, retail customers of the power companies will be spared from having to pay CWIP while consumers of rural and municipal electric systems will, under the FERC rule, be forced to pay CWIP, thereby creating a significant price squeeze. The FERC rule inadequately addresses the problem of price squeeze because power companies will be permitted to collect CWIP before they must prove financial need. As a result, months, even years will pass between the time money is collected from wholesale customers and the time the money would be refunded if FERC finds that financial need did not exist on the part of the private utility. Second, consumers of municipal and rural electric systems that are currently investing in their own generating facilities will face a "double whammy" by being forced to pay for two new plants; the one they own and another, although it may be the same, owned by the power company from which they are purchasing power on a wholesale basis.

The FERC rule makes it increasingly difficult for wholesale power purchasers to develop their own generating capacity. The one thing, the rule requires that wholesale purchasers must prove that their suppliers are not taking their needs into account in power supply planning. It is, needless to say, difficult to prove what was in a person's lines. We respectfully request that the Committee adopt an amendment incorporating provisions from H.R. 555 providing that customers should not be obligated to pay CWIP to the extent that they will not benefit from a power plant under construction.

Today, in some parts of Pennsylvania, rates charged by rural electric cooperatives are double those charged by the neighboring private utility. This rate disparity will be aggravated by the FERC CWIP rule, thereby undermining the stability --- indeed the future viability --- of consumer-owned utility systems. The demise of non-profit, consumer-owned rural and muincipal electric systems will eliminate the yardstick by which the performance of private utilities can be measured.

Fourth, during the last decade, over 100 power plants have been cancelled or deferred nationwide after more than $10 billion have been invested in them. Considering the fact that Pennsylvania is the home of Three Mile Island and Limerick, it is not difficult to understand why Keystone state consumers are concerned about being forced to invest in power plants that may never serve them.

Fifth, despite the fact that Pennsylvania is the home of the power companies that own Three Mile Island, it is also the home of some power companies that are doing quite well financially. The April 17, 1984, headline in The Energy Daily, "For Utilities, 1983 was A Very Good Year," definitely applies to several power companies in the Commonwealth. For example, the Pennsylvania Power and Light Company enjoyed profits in 1983 that were 23 percent higher than they were in 1982 and the profits of the Philadelphia Electric Company were up 30 percent last year. The FERC rule was based on the thesis that the electric utility industry is in financial trouble and that it needs the assistance that automatic, across-the-board CWIP can provide. If, in fact, however, the industry is generally not in financial difficulty, one of the basic principles underlying the FERC rule must be dismissed.

Sixth, not known as a haven for "yuppies," the population of Pennsylvania is older and poorer than the national average. As a result, the forced investment that the FERC CWIP rule will impose will fall most heavily on those who can least afford it.

Seventh, because our population is older than the national average, potentially millions of Pennsylvania consumers face the prospect of investing in a new power plant for years, only to move to a sunnier climate when they retire and before the plant in which they have been investing enters commercial service. To add insult to injury, they may face a similar situation at their new home where they may not live long enough to see this second power plant enter service.

To conclude Mr. Chairman, I would like to turn to one additional point. If the FERC CWIP rule will not provide significant amounts of new capital for the private utility industry that, after careful examination, does not need it anyway, then why are the nation's private power companies fighting so hard to defeat S. 1069 and H.R. 555?

I can only think of one reason. To me, it appears that the power companies see automatic, across-the-board inclusion of CWIP in wholesale electric rates as a foot in the door. By spinning off generating facilities that serve retail customers, facilities that would normally be under the jurisdiction of state regulatory bodies, the power companies would stand to gain additional billions of dollars of revenue as a result of more liberal FERC regulation. I believe we must preserve the traditional system that has worked so well; a system that would be restored by S. 1069 and H.R. 555.

I appreciate this opportunity, Mr. Chairman, to appear before the Committee to speak in favor of legislation that would restore the traditional and proper balance between utility shareholders on one hand, who are the people who should rightly take the risks and the profits associated with new electric generating facilities; and utility ratepayers on the other hand, who are the people who should only pay for new generating facilities when they become used and useful. I urge the Committee to expeditiously and favorably consider S. 1069 or its companion, H.R. 555. Thank you Mr. Chairman for this opportunity.

Senator **Chafee**. I wonder if you could send in documentation for the point you make in the middle of page 2, rates charged by rural electric cooperatives are double those charged by the neighboring private utility?

Mr. **Matson**. I certainly can.

Senator **Chafee**. That's an unusual fact.

Mr. **Matson**. Yes, it is.

Senator **Chafee**. If you would send into the committee your rationale.

Mr. **Matson**. I would be very pleased to do that.[1]

Senator **Chafee**. All right. Mr. Wheatley.

STATEMENT OF CHARLES F. WHEATLEY, JR., OF THE LAW FIRM OF WHEATLEY & WOLLESEN

Mr. **Wheatley**. I represent a number of consumer-owned electric distribution systems located throughout the United States, and I practiced for over 30 years before the Federal Power Commission and its successor, the Federal Energy Regulatory Commission.

I'm here today in strong support of your bill, S. 1069, based on that experience.

Rather than summarize my statement, I'd like to say that from our viewpoint the major problem right today in the electric utility industry—and it exists across the country from my experience in various proceedings—is that of overcapacity.

Almost every electric utility presently has more capacity today than it needs to meet the loads of its customers.

A 20 percent reserve margin is considered over peak load adequate capacity by the industry itself. Most utilities now are carrying 30, 40, 50 percent, and higher margins. And they have had it for many years. It's going to continue for many years into the future.

Now the present impact on the Nation's consumers of this excess capacity is tremendous. It's costing today billions of dollars more for unneeded capacity. And it affects not only the wholesale customers that I represent primarily, but also represents the retail customers of the Nation served by these utilities.

Senator **Chafee**. What do you say to the utilities that will probably say, yes, they've got excess capacity, but much of that is ancient, expensive capacity which they have set aside in order to just have as a reserve just in case, meanwhile they're producing power at the lowest cost in the new facilities?

Mr. **Wheatley**. The capacity that is not retired is used and useful, and if you get into the facts of it, those older units are probably some of the best for consumers in the country because they were built at a low cost and when they're averaged into the overall cost of power, it tends to bring the total cost down.

And to assume that that capacity can be eliminated is not true. And I think that when it has ever been analyzed in the FERC hearings, most all of the capacity that has not been retired is useful and valuable, and certainly very useful to consumers.

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[1] Not received.

Now, how did all this excess capacity occur? My experience has been that in the 10 years since the Arab oil embargo when the industry knew that prices were—they still have been unable to estimate accurately what their capacity needs are. And if you take their 10-year forecasts and go by them year by year and compare them with the acutal peak loads that they meet during that period, you will see that they have been unable to estimate accurately what their loads are. They are left today with excess capacity.

Now on top of that problem of excess capacity, you have the tremendous problem of abandoned plants all over the United States that are a complete waste to the country, where these plants have been closed down and scraped. All those costs are added in.

Now, the FERC order of last March 10, which has an automatic inclusion of CWIP is completely inappropriate on the basis of these problems of overcapacity and abandoned plants.

First, it clearly increases the rates to consumers, and when these rates to consumers go up by putting CWIP in rate base, it makes the consumers use of the existing overcapacity that much less likely. And the problem is, when the rates go up there's a price elasticity of electric power, the usage goes down and overcapacity will be increased.

Second, the CWIP rule of the Commission is improper, I think, because it fails to keep the risk on the utilities of new construction and the incentive on them to do better. It passes that risk from the utilities over to the ratepayers and leaves less incentive for the utilities to do a better job in the future on their capacity needs and requirements.

Senator CHAFEE. They're going to pooh-pooh that argument. They're going to say no utility rushes in to do something reckless just because they're going to be able to start collecting.

Mr. WHEATLEY. Well, I find in my experience that if there's a financial incentive that the utility has to bear and the stockholders have to bear, if they were billed—and this is the way the system has worked until we get this new CWIP rule—that is the best incentive of all. And once you remove that by putting the CWIP rule into effect and passing the risk over to the ratepayers of these projects, there's going to be worse results than we have had to date, and I feel strongly about that. The final point, I think is the CWIP rule by the Commission develops serious inequities among the wholesale customers and the retail customers. And we have had many cases in which the filing of a CWIP rate increase increases their wholesale rate in a State where there is no CWIP, so the retail rates are low, and the wholesale customers end up with their customers paying higher retail rates than the retail customers pay. It's a price squeeze problem, anti-competitive impact. And this is an unfair impact that has resulted from the Commission's rule, and I think your bill, Senator, would directly cure that problem, because you have a provision in there that requires this to be taken into account before any limited CWIP for a utility that might really need it can be ordered.

I thank you.

[The prepared statement of Mr. Wheatley follows:]

TESTIMONY OF CHARLES F. WHEATLEY, JR.
IN SUPPORT OF S-1069

Mr. Chairman and members of the Committee: My statement today will try to avoid rehashing the positions of others supporting S-1069. Instead, I wish to address and rebut the positions of those who oppose S-1069.

From the materials I have read, it appears that the primary position of those who oppose S-1069 is that this issue should be left to the discretion of the Federal Energy Regulatory Commission, especially in view of the Commission's recent promulgation of a rule permitting 50% of construction work in progress to be included in utilities rate base. There are two basic reasons why that position is not valid. The first is generic and the second is particular to the Commission itself.

Generally speaking, we are now in a new era regarding energy policy. In the 1950s and '60s, energy policy was left almost exclusively to the state and federal regulatory agencies. However, that was also an era when energy policy was not deemed to be crucial, either to the health of the national economy or to the local economies. As we know, that has all changed.

The choices made concerning energy policy today will not only greatly affect both local and national economic health, but also the continued viability of many of our cherished institutions. For this reason, both Congress and the state legislatures have become increasingly involved in both the formulation and implementation of energy policy. On the very subject matter of S-1069, construction work in progress (CWIP) in rate base, probably more states have enacted legislation than was enacted in the 1950s and '60s on all regulatory issued combined. Accordingly, even if the Commission had shown all the proper sensitivities to the appropriate interests involved in its rulemaking, this bill would not be inappropriate.

However, it is the second reason which makes this bill absolutely necessary. And that reason is the Commission's continued failure to follow its congressional mandate and demonstrate the necessary sensitivities to the vital public interest considerations involved in this issue.

The first of these public interest considerations is that of competition and price squeeze. It took an order of the U.S. Supreme Court in FPC v. Conway Corporation, 426 U.S. 271 (1976) to get the Commission to grant wholesale customers of investor-owned utilities a remedy for an unlawful price squeeze. Yet, even to this date, the Courts still have to take the Commission to task for its failure to implement Conway in good faith.

On March 30, 1984, the D.C. Circuit Court of Appeals in Boroughs of Ellwood City et al., v. FERC, Nos. 80-2364 et al., concluded that the Commission's lack of sensitivity concerning its obligations under the law "borders on the disingenuous", Slip Opinion at 25. Ultimately, the Court concluded: "the dissonance we detect can be attributed above all, to the complete absence from the Commission's analysis of a concern for the discriminatory effect of the price squeeze on competition and on the municipal competitors which is the very raison d'etre of the price squeeze doctrine." Id. at 37.

This same lack of sensitivity was very much evident in the Commission's CWIP rulemaking, where the Commission virtually ignored the price squeeze implications of its rule. As a result, that rule requires that wholesale customers pay the construction cost of their supplier-competitor's generation plant even where the customer is able to prove either that he will never take any generation from that plant or that his load was never part of the demand the plant was planned and built to meet and that he bears absolutely no responsibility for the decision to build the plant.

The Commission's entire rulemaking was replete with other such examples. A number of parties showed the Commission that the rationales contained in the rule were

were irreconcilably inconsistent with the equities and principles the Commission held sacrosanct in its other proceedings. 1/ Yet, for the most part, the Commission simply ignored these claims.

I submit to you that it is unchallengable that an agency which does not even attempt to respond to showings that a given action is irreconcilably inconsistent with its cherished equities and principles, is not complying with its Congressional mandate; and that such conduct fully justifies a new and more explicit mandate, such as S-1069.

1/ Moreover, it was essentially unchallenged before the Commission that pursuant to traditional ratemaking principles, CWIP in rate base is inequitable to consumers. It was demonstrated to the Commission that CWIP in rate base produced higher rates for consumers than the alternative, AFUDC (allowance for funds used during construction) and thus violated the Commission's mandate to prescribe the lowest possible reasonable rate consistent wth the maintenance of adequate service.

The Commission attempted to respond to this by alleging that absent CWIP in rate base, there existed a "bias" against the construction of plant necessary to the maintenance of reliable service at the lowest cost. According to the Commission, the alleged bias came from the fact that when utilities are earning less than their cost of capital, making additional investment injures the existing stockholders by diluting the value of their investments and earnings. [Footnote continued on next page.]

At this juncture, some of you may be thinking that if the Commission has so clearly violated its statutory obligations, would that not make the wholesale customers confident of overturning the Commission's rule on appeal. Yes, we are confident of our prospects on appeal; however, the prospect of a victory on appeal does little to settle the issue.

Let me cite to you, for example, the Commission's attempt to impose comprehensive tax normalization on the industry. The Commission proposed that rule in 1975, and issued its final order in 1976. The wholesale customers appealed from that rule to the D.C. Circuit Court of Appeals, which, in 1979, overturned the Commission's rulemaking and remanded it to the Commission, citing *inter alia*, the

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[footnote continued from previous page]

The Commission purported to show the existence of this bias by citing to the fact that utilities have been earning less than their cost of capital. However, all the evidence of this fact in the Commission's rulemaking was based on total company earnings, not the earnings of utilities on their FERC jurisdictional business. Thus, there was no evidence in the Commission's proceedings that any of this bias could be shown to be caused by the wholesale customers. To the contrary, the evidence showed that because of the manner in which the Commission determines rates, utilities clearly could earn their cost of capital on the wholesale jurisdictional business. Thus, the wholesale customers proved to the Commission that its rule allowing CWIP in rate base punished them for an alleged crime they did not commit. Nonetheless, the Commission promulgated the rule.

If any member of the Committee wishes a more complete documentation of any of the claims in this statement, we would be happy to make that documentation available.

Commission's insensitivity to the price squeeze issue. In response to the Court's remand, in 1980 the Commission commenced a new rulemaking which resulted in a final rule adopting comprehensive tax normalization in 1982. That rule, too, was appealed to the Courts where the matter still resides. Thus, the Commission's attempts to impose comprehensive tax normalization unsettled utility rates for nine years and counting.

I don't believe that Congress wants this to happen again on an issue so important to the public interest as CWIP in rate base. The country cannot wait for the Commission to become more responsive to your mandates.

There is one last topic I wish to discuss, and this is probably the most important of all. There are utilities which are currently in financial trouble. However, in each and every case, the cause of these troubles can be shown to flow dirctly from investments in new generation plants which are unbelievably costly. Some of these plants are coming in at more than ten times the kilowatt cost of plants built in the late '60s. The predicate of the Commission's rulemaking was to assist the industry in financing these plants. However, the evidence is growing today that these plants are financial disasters for all concerned and should not be built at all.

At very little additional construction cost, we can build homes and businesses which consume a fraction of the energy of those they replace. Comparing the additional costs to improve energy efficiency of new structures with the additional cost of building new generation plant shows that it costs only between one-fifth and one-tenth as much to eliminate a kilowatt of demand as it does to build a new kilowatt of capacity to meet new demand. If, instead of building these dinosaurs, the utilities would fund programs to assist in the financing of high efficiency construction, they would not have any financial problems.

To put it bluntly, the entire predicate of the Commission's rulemaking is in violation of the public interest. However, unlike the Commission's rule, S-1069 requires the Commission to consider energy efficient alternatives.

The Commission's rulemaking is virtually guaranteed to impoverish great segments of our economy, consumers of electric service and investors in electric public utilities alike. S-1069 will prevent that. I implore you to enact this vitally necessary bill.

Thank you.

Senator **Chafee**. I thank you.

Mr. Nathan.

Mr. Bagge, we're going to get to you. We're going to keep going to finish this panel.

STATEMENT OF ROBERT R. NATHAN, CHAIRMAN, ROBERT R. NATHAN ASSOCIATES, INC.

Mr. **Nathan**. Mr. Chairman, I just have a few very brief points.

First let me say that there's no question at all that the consumer pays less over the long run with the present FERC arrangement than under the present bill, because there is no doubt that the cost of capital is higher when the earnings are not really cash but a kind of affliction that puts into the income statement what appears to be earnings but it really isn't; in other words, putting those interest payments which are actual expenses and actually paid, the consumer over the long run will pay more. I have this in my report.

The second point that I would like to emphasize is this subject of overcapacity. I think that there are two aspects of it. One, is this omniscience of hindsight.

The utility industry does have more than the 20-percent reserves now, varying from company to company; but, we mustn't forget that you had the 1973 quadrupling of oil which created distortions in the use of the resources that go into energy that we had anything like before; and, again, the doubling of oil prices in 1979 and 1980. And those had very serious impacts, plus the very high capital costs.

We'd never had inflation in this country like we have had in the last 10 years, which brought the utilities—especially with the regulatory lag—in an impossible position. And that's why their securities sold at tremendous discounts and there was tremendous dilution for anybody who actually purchased known utility securities.

I think we have got to recognize that this building of capacity was a problem that was resulting from a change of external forces.

I know of no utility, Mr. Chairman, that today is doing anything but trying to avoid building new facilities. And this simplistic thought that there's some kind of an orgy in building facilities and great satisfaction, let's build, build, build, I think is utter nonsense.

The utilities today are trying not to build facilities. And let me say on the risk side, Senator, there are a lot of people sitting here saying we may not need capacity until the late 1990's. They're not going to be on the firing lines if we run into brownouts and blackouts. Excess capacity may be costly, but inadequate capacity can be a disaster. And I think this is a terribly important point.

And this idea that CWIP is suddenly going to make the utilities phenominally silly in going out and building capacity, I think is totally irrelevant.

Senator **Chafee**. I agree with you. You might have gotten that from the question I raised. I agree with you, I don't think that's going to promote an orgy of construction.

But what do you say, Mr. Nathan, to the point that this industry survived, came through the 1970's with all the crises that you mentioned without having CWIP. The change of the rules now is putting in CWIP, when many of the financial problems have been resolved.

We're not changing the rules here today, we're trying to go back to the rules that made this a prosperous industry, or an industry that, as was pointed out by Dr. Ewert, is now doing OK; all of this before CWIP ever came on the scene.

Mr. NATHAN. First of all about Dr. Ewert. You know, to pick out 1983 and say it's a wonderful year for them—it is true it's their best year of earnings. But how many years were there when they sold their securities at way, way below book value and the dilution occurred and it was a real problem over and over?

Now, I feel that CWIP ought not to be put in on a needs test. I think CWIP is common in all American industry.

When General Motors builds new facilities, they pay that interest currently, and there's no capitalization, and the income statements reflect current payments. There isn't any tendancy to say, well, you bought a car this year, I'll charge you less because we're putting in a new plant that will come in in 3 years and then we will raise the price.

All of American industry in the private sector averages. There is averaging. And that's a common prevalent practice, and it's a good practice.

Now, you say, Mr. Chairman, you know, why now, if we had problems in the past? I think—I'm sorry to say, I think we're going to go into another period of higher inflation and higher interest rates and higher costs of capital. And to say that we have been in a recession and, therefore, the utilities have done better in 1983, I really believe is misreading the basic underlying principle. And I believe that CWIP is something that ought to be basically included and not year by year on a needs test basis.

Senator CHAFEE. Well obviously, to compare this to General Motors really isn't quite fair, because we're dealing with a regulated industry and all the differences that come there.

Mr. NATHAN. That's actually right. And the regulated industry, in a real sense, you know, people say we ought to have relied on the marketplace, and I would like to see us rely on the marketplace to the maximum extent possible—for instance, by the way, on this overcapacity, too, Senator Chafee, the marketplace will help us get conservation an awful lot more—you know, these people talked about cheap sources of power, insulating the attic and the like and I'm for it. I'm for that 100 percent, enthusiastically, but I think we ought to realize that if we are going to hold prices down and then when the new facility comes on, bump them up at a tremendous margin, you're not going to get the incentive for conservation. It's actually a perverse result.

But on this overcapacity, I tell you, Senator Chafee, I'm very concerned about people saying let's stop all construction unless you have a very unique situation like in Florida, with tremendous growth there in the sunbelt—let's stop all construction until the late 1990's. Who is going to take the rap when we have inadequate capacity? Who is going to take the rap on brownouts and blackouts?

I would rather move on the topside. I'll be very frank and tell you that I believe that today the electric utility industry, because of its problems of financing, is inclined to risk inadequate capacity 5, 8, 10 years from now than over. That's what worries me.

And I think given their general outlook and the continued need for growth, I believe that the legislation ought not be enacted and the FERC provisions ought to be preserved.

[The prepared statement of Mr. Nathan follows:]

PREPARED TESTIMONY OF ROBERT R. NATHAN

on H.R. 555, S. 817, and S. 1069

LEGISLATION LIMITING THE RECOVERY OF CONSTRUCTION WORK IN PROGRESS (CWIP) IN WHOLESALE ELECTRIC POWER RATES REGULATED BY THE FERC

ROBERT R. NATHAN
CHAIRMAN
ROBERT R. NATHAN ASSOCIATES, INC.

BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
OF THE SENATE ENERGY COMMITTEE

May 18, 1984

Mr. Chairman and members of the Subcommittee:

I am Robert R. Nathan, Chairman of the Board of Robert R. Nathan Associates, Inc., an economic consulting firm serving clients here and abroad in both the public and private sectors. I appreciate the opportunity to present my views on the issue of including Construction Work in Progress (CWIP) in the rate base of electric utilities. Having testified in rate proceedings before many regulatory agencies for electric and other utility companies, I have long been aware of this issue. I believe the legislation reversing the decision of the Federal Energy Regulatory Commission to include up to half of CWIP in the rate base is contrary to the national interest.

Including CWIP in the rate base provides benefits to utility ratepayers because of reduced costs of capital, lower long run costs to consumers, and assured continued adequate supplies of this essential service. As an economist, I want to emphasize the economic advantages which result from recovering the capital financing charges on new plant construction on a current basis rather than capitalizing such charges for subsequent recovery only after a plant goes into service. It would be useful to first briefly clarify some terminology in this regard.

The Concept of CWIP

The costs referred to as "CWIP" include actual investment outlays by utilities in building all types of facilities, including generating capacity, transmission lines, and distribution facilities.

Inclusion of CWIP in rate base is a rational and sound method for allowing utilities to recover current carrying charges on these investments in current rates paid by customers of the electric utility. This current cash return is designed to recover the carrying charges only and not to recover any portion of the capital investment being made in the new facilities. The capital investments are recovered through normal depreciation charges only after the facility in question has come into service.

The proposed legislation would, in effect, prohibit the current recovery of current financing costs on new construction underway. Instead, as a substitute for a current cash return to cover the actual current financing costs, an Allowance for Funds Used During Construction (AFUDC) is added to the utility's construction cost by capitalizing the financing costs, which will be recovered, like depreciation, only when the plant comes into service. AFUDC is typically reflected in the utility's income statement as "other income" or as a "reduction of actual interest charges." It is, in effect, non-cash earnings designed to offset the actual cash payments for the financing costs of construction work in progress. The utility's reported net income is about the same under the CWIP and AFUDC approach, but there are important differences in the level of total financing or capital cost in the long term, in the adequacy of cash flow to finance needed disbursements, and in the accuracy of price signals to consumers regarding the need to use electricity more efficiently, and in the cost of acquiring new capital.

A key distinction between the two alternatives is the question of when a customer should pay the carrying charges associated with construction expenditures and how the choice of timing affects the total revenues which must be recovered from ratepayers over the life of the plant. There is no question but that utility customers pay less to the utility over the life of a plant if the utility is allowed to earn a current cash return on CWIP included in rate base. Under the AFUDC approach (i.e., capitalizing financing charges) the value of the rate base is increased more than under the CWIP approach and that larger rate base results in larger depreciation or amortization and larger capital charges over the entire lifetime of that facility. Then, too, there are higher costs of utility financing because of greater risks perceived by investors in the case of utilities with large amounts of non-cash earnings.

The financial community and market analysts have repeatedly noted that investors discount the lower "quality of earnings" associated with AFUDC because non-cash earnings are valued lower than are cash earnings. Therefore, electric utilities must pay higher financing costs for debt and equity funds under AFUDC. The literature includes a number of empirical studies showing this pattern of negative market response to AFUDC. This is especially true in cases where a company's net income consists of very large amounts of non- cash AFUDC earnings. Its added cost-of-capital can be as high as 100 basis points. It should also be noted that the current, or cash, recovery of construction financing costs adds nothing to shareholders' total earnings. It merely converts the non-cash AFUDC earnings to an equivalent amount of cash earnings.

Another benefit to the ratepayer results from utility customers being able to adjust their energy consumption levels on a gradual basis rather than confronting the sudden "rate shock" increasingly associated with the addition of large new plant to rate base. The size of new plants has increased as the electric utilities have sought to achieve economies of scale. Also, the time period of construction has lengthened. With inflation, the cost of capital soared. The United States has never experienced such high interest rates in peacetime as it has in recent years. Prime rates of 12 1/2 percent at this stage of recovery from the worst recession since World War II are an unprecedented economic phenomenon. As a consequence of these factors, increases in rates paid by users under AFUDC can come in large increments.

Economists have long advocated pricing energy at its current costs to assure more efficient allocation of scarce resources. Excluding CWIP from rate base results in a substantial "underpricing" of electricity, thereby failing to encourage conservation measures by consumers. We learned in the 1970s that when consumers (residential as well as business) are given accurate price signals, they have the capability to make intelligent and informed decisions on how to use energy most efficiently. Such price-induced consumption decisions can be highly effective in affecting energy usage and choices among alternative sources of energy.

I am well aware of the argument that consumers of electricity ought not be called upon to pay for costs associated with new facilities but should pay only in relation to those facilities now in operation. But that principle can prove more costly to consumers over time, and disruptive in practice, as I have already indicated. More important, we need to recognize the universality of use of electricity in our society and our reliance on assured supply, quality service and efficient pricing. It is not realistic to separate each investment in utility plant and equipment as if the only beneficiaries are the buyers (wholesale or retail or both) at the time the facility comes on line. Many of those users will move elsewhere long before the new facilities wear out. Costs and benefits of new facilities are not readily apportioned and assessed to identifiable beneficiaries. The building of new facilities to modernize and to assure adequate supply serves to benefit those who are consumers even before the new facilities are completed because current consumers can now make decisions and take actions that rely on assured supply, and that certainly is beneficial. The electric utility should be regulated in a manner designed to benefit all users, not on a short time period basis but on the basis of optimizing consumer benefits over the long run.

Some observers wrongly contend that the inclusion of CWIP in the rate base represents a subsidy by current consumers of construction of new facilities. Actually, electric utilities that are building new facilities are not getting any kind of subsidy from customers to pay for such construction costs. There is nothing more involved here than a transfer of financing charges over time and a net saving to the total of all customers over time. It is true that current users of electricity under the FERC policy on CWIP will be paying the financing costs while the new facility is being constructed rather than having the consumers pay much more when the facility is completed. When we recognize that we are all users of electric power and we also recognize that construction projects for expansion and replacement have always been underway year in and year out and will continue in the future, although at somewhat lower levels, then the timing problem is not a serious one. Under CWIP, we as consumers will pay a little more sooner than under AFUDC, but we will pay less over our lifetimes. In the private sector companies seek to price their goods and services so as to earn profits on all their investment, whether the funds were invested in projects in operation or in projects still in various stages of construction. Averaging over time and among customers is common in our economic system.

There have even been contentions that the FERC decision on CWIP in effect places the burden on current electricity users to provide the investment funds for new construction and thereby relieve the utilities from having to borrow funds for new facilities. This reflects a complete misunderstanding of the results of CWIP. CWIP calls for current users paying only the finance charges for the new facilities, but certainly not for the direct outlays for the construction and equipment of the new facilities. Utilities must continue to borrow funds or reinvest internal resources in new facilities. When CWIP is not included in the rate base the utility must find financing not only for the construction but also for the cost of financing until the project is completed and put into operation.

In earlier years when new facilities could be built in two or three years and before the days of wild inflation when the cost of capital was low, the impact of the AFUDC policy was readily manageable. Now, when six or eight or ten years are required to construct new generating capacity and when interest rates are 12 percent or more and the equity cost of capital is even higher, the old methodology contributed to putting the utility industry into an untenable bind. With interest rates rising again and the economic recovery gradually reducing excess generating reserves, it would be sound policy for the nation, for consumers, and for the electric industry to favor the CWIP approach.

The Role of Electricity in Sustaining Economic Growth

I am concerned that there has been a growing erroneous conception in many sectors of our society that slower growth in energy demand and high reserve capacities in some utilities have somehow totally eliminated the need to finance and construct any new electric generating and transmission facilities for the balance of the 1980s and perhaps well into the 1990s. It is true that the aggregate demand for total energy has remained essentially constant over the past ten years. It is also true that we have had three recessions in the past decade and a slowdown in our economic growth. However, electricity's share of total energy consumption and the demand for electric energy continue to rise. The U.S. economy is becoming less energy intensive and considerably more electricity intensive. Electricity's share of total energy consumption nearly doubled from 18 percent in 1965 to 35 percent in 1982, and can be expected to increase in the future. Also, there is hope that the economy will again grow more rapidly. There will be a continuing need for constructing electric power facilities to meet this demand at the lowest possible cost, although the pace of expansion in generating capacity will be lower than in the past.

The linkages between electricity and the economy are complex and involve a number of factors. Electricity consumption is not a passive result of growth in GNP, it is a key contributor to healthy and sustained economic growth. It is an essential ingredient in the modernization of our productive capacity and in achieving higher rates of productivity and an improved quality of life. In the 1950s electricity grew at nearly three times the rise of real GNP; in the 1960s at almost double the GNP increase; and 40 percent faster in the 1970s despite recurring recessions, inflation and energy crises.

Thus, current forecasts, which generally project that electricity growth will match the growth of real GNP, are not a simple extrapolation of past trends. Rather, they take into account the many foreseeable changes in the structure of our economy, recent and prospective technological innovations, varied adverse effects resulting from our continued heavy reliance on oil imports, the serious need to pursue a higher degree of energy independence, and the importance of restoring our international competitiveness and maintaining a strong and productive economy.

Virtually all published energy forecasts expect the demand for electricity to grow in the years ahead; the only question being how much. Table 1 shows a set of recent

Table 1. Electricity Consumption in the United States
Average Annual Growth Rates

	GNP	Electricity consumption
ADEF (B) (1979-2000)	2.6[a]	4.9
ADEF (A) (1979-2000)	2.6[a]	3.5
Starr-Searl (1979-2000)	2.5	3.2[b]
DOE/EIA (1982-1990)[c]	3.2	3.8
DOE/OPPA (1982-2000)	2.8	2.8
Wharton (1982-2000)	2.9	2.8
DRI (1982-2000)	2.8	2.4
Gustaferro (1982-2000)	2.8	2.3
GRI (1982-2000)	2.9	2.3
NERC (1983-1992)	--	3.2
DOE/EPP (1982-2000)	3.0	3.0
CRS (1982-2000)	3.0	2.9[d]
CRS adjusted (1982-2000)	3.0	1.9[d]

a. Based on a 2 percent growth rate in real per capita GNP.
b. Based on 1980-2000.
c. Based on 1982 estimates.
d. Generation estimate.

Legend:

ADEF	Robert S. Livingston, et al. 1982. A Desirable Energy Future - A National Perspective. Oak Ridge National Laboratory, Oak Ridge, Tennessee. The two projections are based on different scenarios.
Starr-Searl	Chauncey Starr and Milton F. Searl. U.S. Generating Capacity Requirements for Economic Growth, 1990-2000. Public Utilities Fortnightly. Arlington, Virginia. April 29, 1982.
DOE/EIA	U.S. Department of Energy, Energy Information Administration. 1982 Annual Energy Outlook - With Projections to 1990. DOE/EIA-0383 (82). April 1983.

(Continued)

Table 1 (Continued).

DOE/OPPA	U.S. Department of Energy. Energy Projections to the Year 2010 - October 1983. U.S. Department of Energy, Office of Policy and Planning and Analysis, Division of Analytical Services. DOE/PE-0029/2.
Wharton	Wharton Econometrics. Long Term Model to the Year 2002. Philadelphia, Pennsylvania. August 1983.
DRI	Data Resources, Incorporated. Energy Review. Lexington, Massachusetts. Autumn 1983.
Gustaferro	Joseph F. Gustaferro. U.S. Energy for the Rest of the Century. U.S. Department of Commerce, Washington, D.C. 20230. July 2, 1983.
GRI	Gas Research Institute. 1983 GRI Baseline Projection of U.S. Energy Supply and Demand, 1982-2000. Chicago, Illinois. October 1983.
NERC	North American Electric Reliability Council. Electric Power Supply and Demand 1983-1992. Princeton, New Jersey. July 1983.
DOE/EPP	U.S. Department of Energy. The Future of Electric Power in America: Economic Supply for Economic Growth. U.S. Department of Energy, Office of Policy, Planning and Analysis, Electricity Policy Project. DOE/PE-0045. June 1983.
CRS	Congressional Research Service. A Perspective on Electric Utility Capacity Planning. August 1983.

forecasts that represent the current range in expected electric growth rates. With real GNP expected to grow between 2.5 and 3.2 percent per year over the next decade or two, the corresponding range for electricity growth rate is 2.3 to 3.5 percent, with one projection at 4.9 percent. It is reasonable to assume that electricity will grow at approximately the same rate as GNP.

Whereas electricity demand in the 1960s exceeded any prior forecasts, electricity demand during the 1970s grew more slowly than virtually all forecasters (both in and out of the utility industry) had expected. While electricity demand had been advancing at an annual rate of 7.4 percent per year in the 1960 to 1972 period, load growth increased by 2.9 percent per year from 1972 to 1982. This lower electricity growth during the 1970s can be explained by much higher electricity prices, much greater conservation in energy use, lower economic growth, and the changing structure of the economy. If GNP growth and the behavior of oil prices improve over trends in the past decade (which many forecasters anticipate), then electricity consumption will rise considerably and the industry's current capacity plus the additions underway will not be adequate to meet longer term demand. The principal risk is the industry's challenge to select the most economic mix of supply options (without bias against capital intensive technologies) that will enable it to meet demand at least-cost and with continued assurance of reliability of service to customers.

The rate of initiating plant additions has already slowed down and in the next several years will be declining further as the new capacity under construction comes into service. But, the foreseeable capital requirements of the utility industry are still substantial. In 1983 alone, the investor-owned electric utilities spent an estimated $29.3 billion on new electric plant, including nuclear fuel. With AFUDC of $6.8 billion, investment outlays totaled $36.1 billion. Recent Edison Electric Institute estimates indicate that the industry's planned expenditures, including AFUDC, will decline from $36.4 billion in 1984 to $30.1 billion in 1985 and to $27.0 billion by 1987. The 1984-87 four-year total will exceed $120 billion. These figures assume a construction cost escalation rate of 7 percent.

The aggregate investments will be substantial, but the financing needs will vary considerably among individual companies. Furthermore, overall needs will be subject to major fluctuations as a result of changes in economic conditions. To maintain a sound financial base, nearly 60 percent of this total or $70 billion in cash will need to be generated internally. Recent trends suggest that attaining this level of internal cash resources without inclusion of CWIP in rate base may well be impossible for many of the investor-owned utilities. These same trends will make it equally difficult to raise needed investment capital from external sources on reasonable terms.

The importance of an adequate and reliable power supply to long-term economic growth is universally recognized. Neither the risks of blackouts or brownouts nor reliance on high-cost makeshift measures to cope with shortages is acceptable. Several major foreign countries which are competitors of the United States have initiated government managed programs to expand their electric power supply systems in the context of "electrification" strategies focused on new industrial applications of electricity. Many nations have deliberately sought to exploit their natural endowment of low cost energy supplies to make electricity available to new or expanding industrial markets at substantially lower prices than available elsewhere. The United States should not deliberately place itself at a further competitive disadvantage in global markets based on regulatory policies which will lead to inadequate, unreliable or needlessly high-cost electric power supplies.

CWIP and Risks

In discussing CWIP, we need to consider risk and the degree to which the shareholders, on the one hand, or the consumers on the other, should bear all or some respective portions of risk. The issue of abandoned projects has been raised. It has also been questioned whether present consumers should pay anything toward new facilities which conceivably might prove to be less than fully useful and efficient. This subject of risk is important. It must be recognized that the electric utilities are regulated and differ from companies which function totally or largely in the free market. Traditionally, regulatory agencies have allowed a significantly lower rate of return on equity to public utilities than was being earned in the nonregulated sector on the ground that the risk is less for utilities. It is certainly true that fluctuations in the demand for electricity and telephone services, and perhaps even pipelines, tended over the longer run to be less volatile than the demand for many products and services in the unregulated business world. But the public utilities have been subjected to many severe risks associated with inflation and regulatory lag. Their rates cannot be increased without approval by regulators. New and greater risks have evolved over the past decade and more appear to be emerging.

In these days of rapid technological change and complex and revolutionary changes in sources and uses of energy, domestically and internationally, the electric utilities are encountering much greater risks than was true in the past. Shifts from oil to coal; increasingly stringent environmental standards; unprecedented levels and fluctuations in cost of capital; much longer lead times from initiation to completion of large or even modest sized generating facilities; marked changes in public attitudes toward nuclear power and environmental factors; and other developments have presented the electric utilities industry with unprecedented risks. I know this is not the forum to discuss the adequacy of allowed rates of return as set by regulatory agencies, but I do think the Congress should take into serious consideration the higher costs of capital associated with the past treatment of investment in new facilities and the importance of doing everything reasonable to hold down cost of capital for public utilities both in the interests of consumers and shareholders. The proposed legislation that is the subject of this Hearing is incompatible with the increased risks noted above.

Summary

Including CWIP in rate base is a sensible and sound ratemaking policy currently available to utility regulators to hold down the growing cost of electricity to ratepayers. It will help assure needed supplies of electric power essential for economic growth. Sound economic policy is also sound public policy. In the case of CWIP, I strongly urge support for the decision of the FERC to allow inclusion of CWIP in the rate base. On economic grounds, the FERC rule should have allowed inclusion of all CWIP. However, I recognize the balancing of competing interests which is an essential ingredient in the public policy process and in adversary proceedings. Short-term considerations should not jeopardize the needs of the American people for reliable and affordable electric power and, therefore, I urge that the proposed legislation not be enacted.

Senator **CHAFEE**. Well, let me ask you this. If the FERC provisions are right, then why stop at 50 percent?

Mr. **NATHAN**. Well, I think that in a society like ours its proper to do it gradually. But I wouldn't have argued if FERC says we'll go to 25 percent the first year, 50 percent the next year, 75 the third year, and 100 the fourth. It would make a great deal of sense. And I think gradualism is appropriate.

If we believe in gradualism then, of course, we ought to favor this, because we're not going to get that sudden huge jump when these big new facilities come in.

Senator **CHAFEE**. Well thank you, Dr. Nathan. I appreciate your testimony.

Mr. Bagge.

STATEMENT OF CARL E. BAGGE, PRESIDENT, NATIONAL COAL ASSOCIATION

Mr. **BAGGE**. Thank you, Mr. Chairman.

I appear here as the head of the National Coal Association, and in a previous incarnation, a regulator of the electric utility industry having served in the FPC for 6 years.

I want to make two small points—they're big points to us.

I couldn't disagree with my old friend Charles Wheatley more when he talks about how good it is to have obsolete equipment, how good it is for the consumers. We disagree vehemently with that. We think Robert Nathan speaks the truth on that point.

We in coal, our only hope for achieving rational allocation of resources and moving this Nation away from oil and gas as a fuel source to generate electric power is through new plant capacity.

And to the extent that the Congressional Budget Office has a study—and it's in my written statement, and they point out that what we're doing now is trying to lock the electric generating segment into capital equipment that economically obsolete, with two consequences; the uneconomic use of fuels in generation, and in unnecessary limitation on future supplies of energy.

Clearly neither of these outcomes are in the national interest. That's at the heart of this whole debate, it seems to me, not the pickiunishness of who pays when, where and how.

It seems to me there are two consequences:

No. 1. Forcing the utilities opting for Canadian imports, which impacts on this Nation tremendously in a number of different ways, and on my industry particularly, by forcing the utilities, as we are today, with our irrational regulatory policies, to hold onto old, obsolete antequated plants. I means they are committed still to oil and natural gas. This is not sound public policy. We think coal ought to be substituted in the consumers' interest.

No. 2. It seems to me that in terms of the SO-2 emissions, to the extent to which we encourage affirmative utilities to build new coal-fired capacity under the new source requirement standards, using state of the art, for making a contribution to SO-2 emissions, and with all this hoopla about acid rain—and in particular in your part of the country, it would seem to me that you ought to be encouraging the utility industry to build new coal-fired capacity, get off of imported oil and make a contribution to the SO-2.

And your bill isn't going to help it.

Thank you very much.

[The prepared statement of Mr. Bagge follows:]

NATIONAL COAL ASSOCIATION

STATEMENT OF

CARL E. BAGGE
PRESIDENT
NATIONAL COAL ASSOCIATION

ON

S. 1069, S. 817, AND H.R. 555
LEGISLATION CONCERNING CONSTRUCTION WORK
IN PROGRESS (CWIP)

BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

MAY 18, 1984

CWIP

Mr. Chairman, I am Carl Bagge, President of the National Coal Association. NCA represents most of the nation's major coal producers as well as other coal-related organizations. I appreciate this opportunity to express the industry's views and opinions regarding CWIP, or construction work in progress.

Mr. Chairman, NCA supports including CWIP in the rate base in order to improve the financial condition of the utility industry. Those utilities are our most important customer. As you know, the condition of the coal industry itself has not been good, but we expect the situation to improve. Looking into the future, we are predicting that coal-fired plants will be used to generate most new base load electricity. At any rate, that would certainly be the most logical choice for utilities to make. The current financial and regulatory climate, however, tends to act as a drag against any new construction at all. Therefore, we must oppose legislation which would overturn the FERC decision permitting 50 percent of CWIP in the wholesale rate base.

The Federal Energy Regulatory Commission considered this proceeding for nearly two years, during which time over 200 parties submitted their views. The final ruling represented a compromise intended to assist utilities facing a difficult financial climate while protecting wholesale customers from sudden CWIP-related increases. Neither side has been particularly happy about the concessions granted the others, but that is after all the hallmark of compromise.

WHAT IS CWIP AND WHY IS IT IMPORTANT?

Perhaps the best place to begin is by defining what is meant by construction work in progress. Traditionally, a utility's capital expenditures on plant and equipment has not been included in its rate base until after the facility is placed in service. Including CWIP in the rate base means that some portion of the financing costs of major capital improvements will be recovered before the plant goes into operation. All principal, however, would continue to be recovered through depreciation charges only after the facility is put into service.

The arguments of CWIP opponents often create the image of wealthy utilities throwing the entire burden of new construction on the backs of innocent and helpless ratepayers. In fact, however, the FERC ruling is far more limited than those arguments would suggest. FERC Order No. 298 only permits the early recovery of 50 percent of the financing costs. The commission specifically noted that the record would justify allowing 100 percent CWIP in the rate base, but concern over the impact on ratepayers resulted in the decision to hold the figure at 50 percent. Wholesale customers are also protected by an annual six percent cap on CWIP-related rate increases for the first two years, as well as several other restrictions. Furthermore, it should be noted that eliminating CWIP from rate base will not eliminate financing costs. The ratepayer will have to pay these charges sooner or later. Permitting the utilities to recover a percentage of these fees during the construction period simply helps to alleviate a common cash flow problem.

WHO BENEFITS?

Many utilities today face a cash flow problem during the construction period. This situation has developed in the past decade due to regulatory lag in an inflationary environment as well as delays involved in the permitting process. In one study of the utility industry, the Congressional Budget Office concluded that "the deteriorating financial condition of the electric utilities, coupled with the way they are regulated, has impaired the industry's ability to make new investment in generating plants."* FERC's initial response to the utilities' growing financial problems came in 1975, when it ruled to permit CWIP in rate base for pollution control and fuel conversion expenditures, as well as for utilities experiencing "severe financial distress." In the following eight years, however, only one company met the standards established for severe financial distress, in spite of the widely recognized problems confronting the utility industry.

The FERC decision allowing 50 percent CWIP was made in response to this situation. Furthermore, it is incorrect to assume that CWIP benefits only the utilities. First, as I mentioned before, the scope of the decision was deliberately limited in order to protect the utilities' customers. Second, as CWIP assists a utility in recovering its financial health, the utility will find that capital is no longer as expensive to obtain. As it is the customer who ultimately pays those financing costs, their reduction is clearly in his interest.

Finally, CWIP in the rate base provides what could best be considered "social benefits". Under the current system, customers face a large increase in rates when a plant begins operation. With CWIP, that is replaced by several small increases rather than a sudden rate shock. Not only are these smaller and more predictable increases easier on the budget, but they also provide the customer with a more accurate price signal of the true cost of the electricity he is using. In turn, the customers' response to that cost helps the utility in its estimates of future demand.

Last, but not least, CWIP would promote rational decision making with respect to future capital investment. Critics have charged that permitting CWIP in the rate base will encourage the construction of unnecessary plants. The truth is that the current regulatory structure may actually inhibit the construction of new plants, even in cases where such construction is clearly the best alternative. The Congressional Budget Office has examined several regulatory practices which contribute to this, one of which is the use of the AFUDC accounting system rather than CWIP. They conclude that these practices may bias utilities against capital intensive investment. This, CBO states, "would tend to lock the electric generating sector into capital equipment that is economically obsolete, with two consequences: the uneconomic use of fuels in generating, and an unnecessary limitation on future supplies of energy."* Clearly, neither of these outcomes are in the national interest.

This situation concerns the coal industry for two reasons. First, the utilities, which are responsible for over 80 percent of domestic coal demand, are our most important customer. Consequently, the economic health of that sector of the economy has a high priority on our agenda. Second, a more rational decision making process with respect to construction would undoubtedly result in more coal-fired plants. Under the current system, a utility might very well decide to continue using oil or gas for baseload generation even if the construction of a coal-fired plant would be less expensive in the long run.

Permitting CWIP in the rate base is one step in the direction of a healthier utility industry, and I hope the wisdom of the FERC ruling will prevail.

Mr. Chairman, I appreciate the opportunity to present our views.

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* Mahrenholz, Gary J. 1982. Promoting Efficiency in the Electric Utility Sector. Congressional Budget Office. pp. xi, xiii.

Senator CHAFEE. Your bill "is" going to help it?

Mr. BAGGE. Isn't going to help it. We're here opposing your bill. I hope I made it clear, we're against the bill.

Senator CHAFEE. You made it clear, except I missed your last sentence.

Well, I must say, as I think you heard from the question I asked of Mr. Wheatley, I'm a little disturbed over this argument that these obsolete plants are really pretty good things to have around.

Mr. BAGGE. He says they're good for you, Charlie says they're good for you.

Senator CHAFEE. Let's give Mr. Wheatley a chance to rebutt.

I see Mr. Bagge's point there. I'm a little worried about the point that these old plants have reallv produced cheap power and are wonderful things, but why aren't they using them?

Mr. WHEATLEY. The bottom line is what can they generate the electricity for and how much is it going to cost?

Now, the FERC has conceded that this CWIP rule is going to increase the cost to the customer. There's no question about that.

And short term, in their opinion, they didn't indicate that it would ever turn around.

Now, if the consumer has got to pay more for electricity because of adding some new plant other than existing plant, does it make sense? Does it make sense to go to a higher cost generating plants when it results in an increase in the rates over what can be generated now with the existing plant?

Senator CHAFEE. Well, what about Mr. Bagge's point—although Mr. Bagge came on strong for coal——

Mr. BAGGE. That's what I'm paid to do, Senator. [Laughter.]

Senator CHAFEE. What do we say about—there are more things involved than solely cost in these things. There's the pollution factor, for example; there's the risk that what the plant is—the old plant is consuming, say it's an oil-fired plant. Who knows, the price of oil might jump again and be more expensive.

I think you're taking somewhat the short-range——

Mr. WHEATLEY. No; I think those two things are in your bill. In other words, CWIP has been allowed for oil conversion. It's also been allowed for pollution control facilities.

That's not the question here. We're saying that that is a proper use. What we're saying is that when the Commission went beyond that with a general overall rule to go up to 50 percent of nonpollution, nonfuel conversion facilities, that's when it created a problem, because there they can include anything that is not for those other two objectives.

So your bill, I think, covers Mr. Bagge's problem.

Senator CHAFEE. What do you say to Mr. Nathan suggesting the fears voiced by you and perhaps by Dr. Ewert that's there is suddenly going to be an orgy of building, reckless building, because there are no constraints and they could do that. What do you say to that?

Mr. WHEATLEY. You mean an orgy if the CWIP goes in? I think that the CWIP will take away some incentives to keep the construction down to what is absolutely necessary.

If your bill is passed, we go back to the rule that we have lived with for years and years. The utilities will have the risk and they will operate in that arena, and that is the best arena for them to be operating in. Even though they have been operating in that arena, we have had this problem of excess capacity.

And I think it's the wrong time for a concept to come in with this present overcapacity situation. It is the wrong time and place to depart from the historic way of rate regulation which places the risk on the company and the stockholders to shift to one which limits that risk in any way, which the CWIP rule does.

Senator **Chafee**. Are there any other comments?

Dr. **Ewert**. Yes.

Senator **Chafee**. Yes, Dr. Ewert.

Dr. **Ewert**. I'd like to make two rather brief ones, if I may.

The Solomon Brothers forecast for the industry as a whole 75 percent of the construction cost by 1986 will be internally generated—no, 74 percent by 1986.

We now see articles in Fortune magazine and elsewhere about the new problem for power companies 'excess cash, what to do with the excess cash.

So the idea of CWIP, to put CWIP in at a time to give blanket across the industry seems to be inadequate, a blanket solution.

The second point. Mr. Nathan mentioned about the private sector and what regulation is supposed to do is mirror that competitive environment, the free enterprise will that we're trying to accomplish.

Some of my best thoughts occur in the shower, and this morning was one. I was at the hotel and it ran out of hot water, and it occurred to me that that was similar to the brownouts we fear, and some people fear more that if we don't have CWIP in.

If they had CWIP in, to put a new boiler in that hotel, it sounds to me very much like a double dip; that is, I pay by having cold water this morning, and my hotel rate would have been higher. In a competitive environment, my hotel would not be able to charge a higher rate today so they can serve the customer better tomorrow. And that's how I feel the CWIP issue us.

Senator **Chafee**. Well, Mr. Nathan would dispute that with the General Motors illustration.

Dr. **Ewert**. That's what I was trying to counter. I don't see how General Motors, unless they have monopolistic pricing, would be able to price higher than their competitors. Such as my example with the hotel, given that there's a competitive market for hotels for last night in Washington, DC, they wouldn't be able to just uniformly or individually move their price up if they have other competition around.

Senator **Chafee**. Well, Mr. Bagge.

Mr. **Bagge**. I didn't get this thought in the shower, but it just occurred to me, Senator——

Senator **Chafee**. Well, that was obviously not a coal-fired boiler. [Laughter.]

Dr. **Ewert**. I wish it would have been a coal-fired boiler.

Mr. **Bagge**. If they want to heat it with coal, we'll work for that, too.

But I want to say that we don't see the issue in perspective. He's giving his grandious thing like we're imposing upon the backs of the ratepayers nationally this evil of CWIP.

The fact is, having been a former regulator of this industry I can tell you the jurisdictional limits of the FERC, FERC's jurisdiction on rates, it's miniscule. We're talking here—the issue here in terms of amending the Federal Power Act, that that is where it outcrops here, is only in about 3 percent of the total generation of this country. And then they made a political decision to cut that in half. It seems to me we ought to bear in mind we're talking about a very miniscule slice of the economic consequences of this bill—and don't talk about a pervasive kind of blanket approval of CWIP, because it ain't going to happen even if your bill is defeated—which I pray god it will be.

Senator CHAFEE. Well, Mr. Bagge, you equivocate so when you testify here. [Laughter.]

Senator CHAFEE. Anybody else?

Dr. BROWN. I'd like to make a statement about the risk aspect.

Senator CHAFEE. We have got to wind this up or the gods from on high will strike us. Go ahead.

Dr. BROWN. Sharing the risk, to me, does not seem to be an evil proposition. After all, if this were a free market enterprise and electricity was out there like Renaults and Datsuns and General Motors compact cars, that would be one story, but it's not. Electricity is a vital commodity and, therefore, it's regulated.

You can't have it both ways. You know, you can't have the free market operate in one area, getting capital financing, and then regulate the rates.

And so to me the sharing of the risks—if that's indeed what we're saying is happening with CWIP—and I really don't believe that—but if you did that, is not a problem. In fact, you know, we're partners in this.

Senator CHAFEE. All right, fine.

Thank you very much, gentlemen. The record will remain open for 2 weeks if anyone wants to submit any additional information.

You're going to send some, Mr. Matson, to us.

Mr. MATSON. Yes, sir.

Senator CHAFEE. And we may have questions directed to the witnesses and we would ask that you respond promptly.

Thank you. And as for the next panel, I will notify you, or the staff will notify you when to come back. We are sorry for the inconvenience.

Thank you.

[Whereupon, at 10:47 a.m., the hearing was adjourned, subject to the call of the Chair.]

CONSTRUCTION WORK IN PROGRESS POLICY ACT

THURSDAY, AUGUST 2, 1984

U.S. SENATE,
SUBCOMMITTEE ON ENERGY REGULATION,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The subcommittee met, pursuant to notice, at 9 a.m., in room SD-366, Dirksen Office Building, Hon. John H. Chafee, presiding.

Present: Senator Chafee.

Also present: Howard Useem, professional staff member; Elizabeth Moler, counsel for the minority; and Benjamin S. Cooper, professional staff member for the minority.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, A U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator CHAFEE. This morning we are having our third and final hearing before the Subcommittee on Energy Regulation on proposals to limit inclusion of construction work in progress in the wholesale rate base of public utilities.

Each of you here to testify before the subcommittee today were originally scheduled as witnesses for the second hearing, but we were not able to hear from you last time as you may all recall. Our hearing was cut short due to the fact that the Senate was in session, and you were kind enough to come back today. I greatly appreciate it, and I thank you for that. I must say it is a formidable looking group. Eight witnesses, that's a big panel.

Obviously your statements will be placed in the record in their entirety, so I do ask that each person to summarize his statement.

As you know, we've heard already from industry associations, so I hope you will address the specific affects of the legislation on your own situations.

Senator Warner wished to be here to particularly introduce Mr. Munsey from Vepco, and Senator Warner is detained. So consider this a very formal welcome on his part.

Mr. MUNSEY. Thank you.

Senator CHAFEE. Why don't we start as listed in the program with Mr. Eichorn, Eastern Utilities Associates. Mr. Eichorn, I appreciate your coming back.

STATEMENT OF JOHN F. G. EICHORN, JR., PRESIDENT, EASTERN UTILITIES ASSOCIATES

Mr. EICHORN. Good morning, Mr. Chairman, thank you. My name is John Eichorn. I am president and chief executive officer of Eastern Utilities Associates, which is a holding company in Boston, MA. We have a retail operation in Massachusetts and Rhode Island. One of our subsidiaries, Montaup Electric Co., is 75 percent regulated by the FERC.

Just to give you a little perspective on our size, in 1983 our revenues were approximately $300 million. That makes us about the 100th largest utility in the country. Our planned service at that time was $93 million, but we had construction work in progress at the same time of $241 million, which means that we had 2½ times the money invested in construction work in progress than we did in plan of service.

I would like to make my remarks very brief this morning. I have read the previous testimony of the EEI witnesses and concur in general with what was said. I would like to point out, though, that Mr. Alex Radin of the American Public Power Association did quote from our annual report in his remarks in which he commented about our earnings, that we had an earnings increase from $2.25 to $2.80, and he characterized that as being a significant windfall from FERC's permitting 50 percent construction work in progress in rate base.

Now if Mr. Radin had taken the time to look further at our annual report and notice our financial statements, he would have noticed that indeed our earnings had 96 percent of AFUDC and no CWIP. So I don't think that I would like to see it characterized as a windfall by CWIP for our earnings.

I also see a threat during part of these hearings which you've indicated that possibly rate shock is a problem. I would like to point out that with CWIP rate shock is avoided to some degree. In our particular instance, we have two nuclear plants under construction in which we have part ownership in, Millstone III and Seabrook I, both of which are due to come on line during 1986. We have construction work in progress. Our predicted rate increase for those two units coming on line is approximately 13 percent. Without CWIP, a limited amount by the way, not anywhere near 50 percent, without CWIP that same rate increase would not be 13 percent, it would be closer to 32 percent. So it makes a significant difference on the impact of the customer when we have construction work in progress or not.

Senator CHAFEE. Well, now, the difference you point to between AFUDC and CWIP being that you have the use of the CWIP moneys during the construction period, and, thus, can meet your bonded interest, and so forth, from that.

Mr. EICHORN. We are able to collect from the consumer the interest on the money that we are investing during construction. It does help a great deal toward the coverage. You are right. It also helps the cash flow particularly, too, which is very significant in the same realm.

One of the threats I've noticed during the hearings, Mr. Chairman, is the criticism that we have excess capacity in some places.

It has been alleged that we have 40 percent excess. Well, that's not actually true. In order to operate any electric system you have to have additional generation for periods of maintenance as well as for forced outages. In New England just during the last few weeks of hot weather, we've had at least 2 weeks in which we were very, very close to using every bit of our generation. We had to go into what we considered our emergency procedures and start to activate the means of curtailing electric load as much as we possibly could. We didn't go as far as having to ask the customers to curtail, but we did do all internal means including making our electrical equipment go into a voltage reduction, which eases the need for capacity. Part of this is caused by growth. We have been experiencing little growth since the early 1970's, 1973, 1974, due to the impact and the high cost of fuel, but right now in New England we are growing. In the last 12 months our energy consumption has grown at the rate of 8 percent, so we've left the plateau that we were on for a long period of time, and all of a sudden we are seeing with the improved economy increased usage. A lot of this, I am pleased to say, is due to industrial usage which helps.

Senator **Chafee**. That is Reaganomics.

Mr. **Eichorn**. Yes, definitely. I am trying to keep this nonpartisan.

Senator **Chafee**. Oh, don't worry.

Mr. **Eichorn**. At the same time, of course, we are having our peak load, too. Our peak is up at the time about 3 percent.

Senator **Chafee**. Your peak is what?

Mr. **Eichorn**. Up 3 percent at the present time compared to the last few years. It has been going up less than a half percent, for some years even staying even. So we are beginning to see growth again.

I guess what I would like to do is make a couple of comments about being opposed to the legislation, and tell you what we think are some of the difficulties we see.

Senator **Chafee**. Then could you also respond to the theory that has been advanced by many of the witnesses in favor of the legislation that you get careless and you go into the production of uneeded facilities, or facilities that perhaps may not be needed?

Mr. **Eichorn**. I will try to respond to that, yes.

As to the legislation itself, we see two significant weaknesses in it if it were to be legislated. One is that there is no standard for establishing what a "severe financial difficulty" is. This is one of the difficulties the FERC had under its prior rules.

The other significant change that we see that would be bothersome is that there doesn't appear to be any means of permitting a rate filing to go and subject to refile without full approval of the FERC.

Senator **Chafee**. You appreciate that this legislation has a different standard than FERC has?

Mr. **Eichorn**. Yes, I do.

Senator **Chafee**. There is a definition about the ability to go into the marketplace and raise money.

Mr. **Eichorn**. I still don't think it is definitive enough, Mr. Chairman. It seems to me that it could be better orchestrated at some other levels, and perhaps maybe we could provide you with some suggested insertion in there if you would.

Mr. **Chairman**. I urge you not to pass this, but to allow at least a little time to go in and see if the FERC 50 percent rule doesn't work, sir.

Senator **Chafee**. Thanks again for coming down. You are based in Boston, aren't you?

Mr. **Eichorn**. That's correct.

[The prepared statement of Mr. Eichorn follows:]

STATEMENT OF JOHN F. G. EICHORN, JR., BEFORE THE SENATE ENERGY AND NATURAL RESOURCES SUBCOMMITTEE ON ENERGY REGULATION

1. Introduction

My name is John F. G. Eichorn, Jr. I am President of Eastern Utilities Associates, a public utility holding company which provides electric service through its retail subsidiaries, Eastern Edison Company in Massachusetts and Blackstone Valley Electric Company in Rhode Island. These companies buy all of their power from the system's generation and transmission utility, Montaup Electric Company, at wholesale rates regulated by the Federal Energy Regulatory Commission. As a result, 100% of Montaup's revenues and all of our system's generation and transmission costs -- over 75% of our total costs -- are regulated by FERC. We are presently engaged in a major construction program which has caused Montaup's investment in projects still under construction to be more than twice as large as its investment in plant currently rendering service. Montaup's construction program coupled with the inability to include CWIP in rate base have imposed a severe financial strain on our system.

I support the view taken by the witnesses for the Edison Electric Institute that including 100% of CWIP in rate base is in the best interests of consumers over the long run. If that view were adopted by FERC we would be able to improve our financial position and lower our capital costs for our customers' benefit.

FERC, by allowing 50% of CWIP in rate base after a two year phase-in period, has gone only halfway toward serving the consumer's long-run best interest. While FERC has not gone far enough or fast enough from our point of view, its present standard does, at least, represent a conscious balancing of present and future interests. It also provides us with a secure foundation to complete our construction program.

That foundation was not present under the severe financial difficulty standard as previously applied by FERC. Under that standard we were forced to go without CWIP relief while our bond ratings deteriorated to the lowest investment grade and the rating agencies threatened to lower those ratings below investment grade. If that had happened we would not have been able to raise enough capital to meet Montaup's contractual obligations to make construction payments under joint ownership agreements and would have been thrown into a financial crisis. Montaup was able to head off a financial crisis only because the FERC allowed CWIP relief at the last minute subject to refund.

The severe financial difficulty standard as proposed to be reinstated in the bill passed by the House poses an even worse danger since it does not even clearly permit emergency relief subject to refund. It appears on its face to permit FERC to allow relief subject to refund based on a preliminary determination of severe financial difficulty, but it contains ambiguous language which could prevent FERC from allowing CWIP relief subject to refund even in an emergency. This could prevent us from filing any rate increase unless we remove the CWIP now in the rate base. This could precipitate another financial crisis which FERC could not meet by allowing CWIP relief subject to refund since this time FERC's hands would be tied by Congress.

Let me now turn to the facts which support that conclusion.

I

EUA had revenues in 1983 of just over $300 million, which ranked it about 100th in the electric utility industry and among the smallest utilities in New England. We are not large enough to build a major generating unit on our own. Instead, beginning in the early 1970's Montaup entered into joint contractual commitments with other New England utilities to construct several generating units in order to meet capacity needs and reduce the region's excessive reliance on foreign oil. The investment made by Montaup in those projects has increased its CWIP balances until Montaup's CWIP presently is over 2 1/2 times its net plant in service:

	CWIP	Net Plant In Service	CWIP As A % of Net Plant In Service
1980	$ 77 million	$102.6 million	75
1981	$113	$100.5	113
1982	$167	$ 95.0	176
1983	$241	$ 93.0	256

As shown by the above figures, the ratio of Montaup's investment in projects under construction to its investment in plant rendering service rose from 75% in 1980, to 113% in 1981, to 176% in 1982 and, finally, to 256% in 1983. Montaup's escalating CWIP balances have caused "paper" earnings from Allowance For Funds Used During Construction *consistently* to approach or exceed 100% of Montaup's net income and have depressed internal cash generation to very low levels. In 1980 internal cash generation from all sources was not sufficient to cover even Montaup's payments of interest and dividends, which meant that internal cash generation was *negative*.

II

We knew by 1979 that we needed to include some of Montaup's CWIP in its rate base to be able to finance its escalating construction program to completion. In December 1979 we asked FERC to order an immediate hearing under expedited procedures which would enable it to get its final order out and grant relief by the end of 1980. The FERC did not even order a hearing until July 1980. By that time it had become clear from other proceedings that CWIP cases were drawn out, involved affairs and that, in any case, relief was not available under an emergency standard until the utility was on the verge of bankruptcy. Since we were not yet in that condition, we abandoned our CWIP application.

We tried again in July 1981 by requesting the Commission to amend its severe financial difficulty standard to permit Montaup, as a 100% wholesale utility, to include some CWIP in rate base. Shortly after we made that request, we received alarming news from the rating agencies. Both Standard and Poor's and Moody's lowered the bond ratings of Montaup's parent Eastern Edison to BBB-/Baa-3, the lowest investment quality ratings, with specific warnings that the ratings would be lowered below investment grade unless the Commission acted promptly to allow Montaup CWIP relief. Standard and Poor's said in the July 11, 1981 issue of its "Fixed Income Investor" that

> FERC has consistently ignored petitions requesting a cash return on CWIP and this account will continue to grow to substantial levels relative to net plant in service and total capitalization in upcoming years. In our opinion, continuation of current FERC policy regarding CWIP will cause excessive reliance on capital markets and could result in an extended period of financial stress.

Standard and Poor's made clear that Eastern Edison's rating would be further lowered to less than investment grade unless Montaup were able to obtain CWIP relief:

> Maintenance of investment grade security ratings will be heavily dependent upon the timeliness of an affirmative FERC ruling on the Company's request to include CWIP in rate base so that the system's internal funding ability improves, over its present minimal level. [Id.]

The rating agencies would be evaluating the ratings again the next time Eastern Edison attempted to issue bonds in May 1982. If the ratings were lowered below investment grade, to the level of "speculative" investments, we knew that Eastern Edison would be virtually shut out of the bond market and could not raise money in amounts nearly large enough to carry Montaup's construction program. If Eastern Edison could not raise sufficient money to carry on the construction program, the consequences would have been grave, indeed. Montaup would likely have been compelled to default on its obligations under the joint ownership agreements. If forced to default, it would have had to forfeit its investments in the projects and expose itself to suit for damages by other joint owners. This could have led to bankruptcy.

In order to try to find some solution, we met with the FERC's Staff and the intervenors in our pending rate case. The meeting resulted in an agreement by the Staff to support waiver of the rule that CWIP relief can be allowed only prospectively so that we could get at least some CWIP relief in effect subject to refund before the rating agencies acted. In February 1982 we filed to include 16% of Montaup's CWIP in rate base, resulting in a two percent rate increase. The Commission waived the prospective-only requirement and allowed the increase to go into effect subject to refund in April 1982. The rating agencies both maintained Eastern Edison's ratings at the minimum investment grade on the strength of the Commission's favorable action in allowing CWIP relief subject to refund.

III

The House Bill appears to permit the Commission to allow CWIP relief subject to refund in Section 213(f) set out below:

> (f) If an application by a public utility pursuant to subsection (c) of this section contains a certification of "severe financial difficulty" (as defined by the Commission by rule) and if the Commission finds that such public utility is in "severe financial difficulty", the Commission, after preliminary adjudicatory hearing on the matter of the validity of the certification, shall permit, by order, the inclusion of the costs of such public utility's construction work in progress in the rate base and shall permit any rate increase attributable to such inclusion in the rate base, subject to the limitations set forth in paragraphs (1), (5), and (6) of subsection (h) of this section, to take effect immediately. The Commission shall require any public utility collecting any such rate increase to refund, with interest, to the persons on whose behalf such increases were paid, such portion of such increased rates as, by final order issued pursuant to subsection (g) of this section, shall not be found justified. [Emphasis supplied.]

But note that the language that I just read makes the authority to allow relief subject to refund contingent on paragraph (6) of subsection (h). The reference to subsection (h) brings the following language into play:

> (6) no electric energy rate increase attributable to the inclusion of such costs in the rate base may be charged for electric energy sold prior to the date of a Commission order approving such increase. [Emphasis supplied.]

In other words, while the interim procedure is clearly intended to allow CWIP relief subject to refund, the reference to paragraph 6 inexplicably says that CWIP relief can never be allowed subject to refund. There is no way that the two provisions can possibly be reconciled with one another. The drafter created the escape valve with one hand and welded it shut with the other. So there it sits, looking like an escape valve but not functioning like one.

The ambiguity guts the bill of any possible usefulness for the purpose for which it is at least ostensibly intended -- as an emergency relief measure. Proceedings under the old severe financial difficulty standards were complex, drawn-out affairs. Emergency relief must be capable of being granted quickly -- not after years of hearing and decision-making. The only way to meet an emergency is by allowing relief subject to refund, as our own experience demonstrated.

The consequences of the ambiguity in the House bill for us are frightening if the bill were to become law and were construed to prevent any CWIP relief subject to refund. We could not file any rate increase without immediately removing from the rate base all of the CWIP we already have pending the outcome of a hearing which could last for years. It would be as if we had been hurled back into the dark days of 1981 and early 1982 when the rating agencies could see that we had no way to complete our construction program without CWIP relief. We would then face an emergency without recourse to emergency relief. I cannot over-emphasize the danger that the House bill would pose to the Eastern Utilities system.

IV

The present CWIP standard produced immediate benefits for us and the consumers we serve. In May 1983 Standard and Poor's and Moody's, pointing to CWIP relief under that standard, upgraded Eastern Edison's ratings to BBB and Baa-2, respectively. Standard and Poor's cited the standard in the May 16, 1983 issue of Credit Week:

> The higher ratings for Eastern Edison reflect expected improvement in cash flow and the quality of earnings and pretax interest coverage, as a result of the recently proposed Federal Energy Regulatory Commission's ruling to allow companies under its jurisdiction to earn a cash return on up to 50% of construction work in progress (CWIP). Additionally, the ruling will provide the company with a greater ability to absorb future cost increases or construction delays at Seabrook or Millstone 3.

Thanks to the improvement in ratings and favorable market conditions, Eastern Edison was able to issue $40 million of thirty year bonds in May 1983 at an interest rate of 12-1/4%. This was the first time in ten years that Eastern Edison has been able to sell bonds with a thirty-year maturity and the 12-1/4% rate was the lowest Eastern Edison has achieved since 1975. The higher credit quality ratings saved about 3/8 of 1% in interest rate on the May issue. Over the 30 year life of that issue, the savings amounts to $4.5 million. The present value of these savings, at a 12% discount rate, is approximately $1.2 million. These savings will be flowed through in their entirety to consumers.

The present FERC standard is not a financial cure-all, however. Our bond ratings are still only half a notch above the lowest investment grade and our levels of AFUDC will continue to be high with only 50% inclusion of CWIP under the new policy. We could reduce our capital costs more, serving the long-term interest of consumers in lower rates, by including 100% of CWIP in rate base. The present CWIP standard can be justified only as a compromise balancing the advantage of holding down rates in the short term against the higher costs that will be incurred over the long run. In like vein, the public interest in eliminating "rate shock" when new projects are placed in service would be best served by placing 100% of CWIP in rate base. That public interest is only half served by the present standard, but at least it represents a conscious balancing of interests. By contrast, the proposed legislation would utterly abandon, for short-term rate advantages, the major advantages of both lower rates in the long term and rate continuity when new projects are placed in service.

I urge that the proposed legislation not be allowed to become law.

Senator **Chafee**. Fine.
Mr. Taulbee.

STATEMENT OF JOHN TAULBEE, EXECUTIVE VICE PRESIDENT AND CHIEF FINANCIAL OFFICER, CENTRAL AND SOUTH WEST CORP.

Mr. **Taulbee**. Good morning. Thank you for the opportunity to appear before you. My name is John Taulbee. I am chief financial officer of Central and South West Corp., a public utility holding company headquartered in Dallas, TX, serving the four States, Texas, Oklahoma, Louisiana, and Arkansas.

Senator **Chafee**. We will be down to see you in a couple of weeks.

Mr. **Taulbee**. Very good. We will welcome you one more time. Could I address that issue right now on the need and capacity?

Senator **Chafee**. Sure, please go ahead.

Mr. **Taulbee**. As chief financial officer, the person that has to raise billions of dollars in the market, construction programs are put together by engineers, and in the past, like 10 years ago, they were pretty well accepted, but now they have to pass the financial test, whether or not the money is available.

Any utility that would want to build more than it needed would be working against its own interest for the simple reason that very few utilities earn the authorized return. The more you build, the less your earnings, and the bill before the Senate now on CWIP would make it even worse. The earnings are lower and the quality of the earnings drop substantially because they are noncash earnings. They are allowance of funds during construction.

We are a fairly large utility. Our revenues last year were $2.6 billion. Our construction program this year is $900 million.

Senator **Chafee**. That qualifies as large.

Mr. **Taulbee**. Yes. We are not the largest, but we have a service territory of 152,000 square miles. To put that in context, the State of California is 180,000 square miles.

Senator **Chafee**. How many people do you serve?

Mr. **Taulbee**. Our customers number 1.5 million. People would be something over 3 million.

Allowance of funds used during construction was a rather harmless thing 10 or 15 years ago because it was insignificant. Now it is very significant. There are certain utilities that the allowance of funds used during construction credit to earnings, which is nothing but an accounting entry. It is not cash. It is larger than the bottom line. In other words, they are paying dividends, and they are borrowing money to pay the dividends, and they are borrowing extra money to pay the interest on the money that they borrow.

There is also a subject of quality of earnings. There are certain financial parameters that Wall Street looks at, Wall Street, the investment community if you will, and since capital cannot be constricted, whether you agree with them or not, you have to pay attention to what they pay attention to. One is internal generation of cash. What that means is how much are you earning today that you can apply to your construction program as a percentage of the total construction program, or conversely, how much do you have to borrow or raise in the capital markets. Again, there are certain utilities that are borrowing more than their total construction program. They are borrowing to pay dividends. To have a decent credit rating, generally speaking, you should have at least 50 percent internally generated cash. We are under that now. We hope to get there in the future. We do have construction work in progress and rate base to a certain extent in Texas. We use to have it in Louisiana, but that has changed recently. We hope to change that back.

Another is interest coverage. How safe are the interest payments? Borrowers look at that very closely. To have a good credit rating, which all of our companies right now are AA, although one of us is AA minus, you need to have 3½ times pre-tax. Pretax is very important. The reason it is pretax is that interest has a prior claim to taxes, which merely means that interest is tax deductible. Allowance of funds used during construction contributes to earnings but it is non-taxable. I submit, sir, that any earnings of quality that even the Federal Government will not tax is not a very high quality.

Therefore, to the extent that your earnings are made up of the larger funds used during construction, and that is pretax and after tax, the coverage goes down. Also you have indenture provisions. This, by the way, was dictated by the Securities and Exchange Commission back in the 1940's, which is part of the Federal Government. They will not allow earnings for coverage purposes from other income which allows firms during construction more than 10 percent.

Now when you get a utility that is getting 40, 50, 60, or 100 percent of earnings from allowance of funds during construction, the coverage test cannot be met.

In my testimony I give an example of one of our subsidiaries that has participated in the nuclear powerplant. If the construction of a nuclear powerplant, if it did not have construction work in progress in rate base, at least a portion of it, it could not be financed. We could not issue additional bonds.

I have covered the points——

Senator CHAFEE. How did you get along before FERC allowed the 50-percent CWIP?

Mr. TAULBEE. Good point, sir, and I meant to bring that up first. Less than 10 percent of our revenues are subject to FERC regulation. We are very concerned about the bill because of its precedential value, and that is why we are very interested.

Senator CHAFEE. You mean to the States?

Mr. TAULBEE. Yes, the States might follow it being the will of the people to the Federal Government.

We are very much opposed to the bill and think it would be very harmful to people.

Senator CHAFEE. Would you urge for it to go further than the 50 percent?

Mr. TAULBEE. What we would really urge, and I am talking from Central and South West's viewpoint only——

Senator CHAFEE. That is all you are representing.

Mr. TAULBEE. Yes, sir. We would like to leave it as it is. If they want to go further, great, but just not have legislation dictating what we think is bad policy, and that is the construction work in progress is something that should not be paid for. The used and useful rule is often referred to, that is rate payers should only pay for return on something that is used and useful. What is used and useful? It is whatever you want to define it to be. It certainly isn't used but is it useful? Is it in the interest of the current rate payer to have a construction program so that future needs will be met? Several States have come to that conclusion. We come to that conclusion.

[The prepared statement of Mr. Taulbee follows:]

STATEMENT OF
JOHN TAULBEE
CENTRAL AND SOUTH WEST CORPORATION

Mr. Chairman and members of the Subcommittee. My name is John Taulbee, Executive Vice President and Chief Financial Officer of Central and South West Corporation.

Central and South West Corporation is a public utility holding company that owns four electric operating subsidiaries. These are Central Power and Light Company, Public Service Company of Oklahoma, Southwestern Electric Power Company, and West Texas Utilities Company. These four subsidiaries provide electric service to approximately four million people who live in portions of Texas, Oklahoma, Louisiana, and Arkansas.

Central and South West Corporation also owns Transok, Inc. an intrastate natural gas pipeline and processing company.

Mr. Chairman, the issue of allowing the Federal Energy Regulatory Commission (FERC) to continue its practice of allowing the recovery of some portion of CWIP in those rate cases over which FERC has jurisdiction is of vital importance to the utility industry across the country.

Reading the provisions of the three bills, S. 817, S. 1069 and H.R. 555 pending before this Subcommittee brings to mind the old story about the Vermont farmer, when asked by a tourist how to get to East Brattleboro, decided "you just can't get there from here." Should the provisions of any of these bills be enacted into law, utilities, under the jurisdiction of FERC, will be essentially precluded from rate base treatment of CWIP with the rare exception of a utility on the edge of bankruptcy. Although this may not be the intent of Congress, we feel that this will be the effect of these bills.

The question must be asked before a final decision is reached, whether Federal preemption of this issue is in the public interest. The public interest is often equated with the interests of the American consumer. It is only natural that the elected representative of the American consumer would have a preference for protecting the consumer which raises another question: Does the American consumer need protection?

Congress once believed that the American consumer needed protection from natural gas prices and allowed a court ruling to stand which regulated the price producers could charge for natural gas. The result has been prices that are too low and prices that are too high, gas gluts and gas shortages, angry consumers and angry producers.

The electric power industry is in essentially the same position. Given the capital intensive nature of the industry and the long lead time required to construct major generating facilities, we must begin spending money this year in order to meet our customers' expected needs ten years from now. It is true that the accounting profession has devised the allowance for funds used during construction mechanism to account for the costs of a long term construction program but the controversy over AFUDC regarding the poor quality of earnings it yields usually overlooks the most important weakness of this concept which is its inability to reflect the costs it is accounting for in the price of the product as those costs are incurred.

Economics tells us that when all of the costs of production are not included in the price of a service, customers will consume more of that service compared to the level of consumption that would occur if all of the costs were included in the price. Increasing consumption of electricity causes the construction of additional major generating facilities but the costs of these facilities are not reflected in the price of electricity during construction, absent rate base treatment of CWIP. As a result, consumption continues to increase during construction and, by the time the cost of the unit is reflected in prices after completion, the construction of another unit is well under way--the costs of which are not reflected in the price of electricity.

It must be emphasized that it is the current consumption of current customers which will cause the utility to begin construction of a major generating facility and the costs of this facility are very much a part of the cost of serving current customer service demands. If current consumption of electricity was stable or declining, a new generating unit would not be built unless it is designed to replace older units. In this case, construction is predicated on the service requirements of existing customers and the carrying costs of construction must be reflected in the price of electricity if existing customers are to make rational choices about their usage of electricity today.

Essentially, permitting rate base treatment of CWIP means that current customers are paying the costs they are causing and our customers, when faced with the full cost of consumption, would be in a position to determine the relative value of electricity compared to other consumption alternatives. Electricity, like oil, has no intrinsic value and, if no electric equipment or appliances existed, the price consumers would be willing to pay for electricity would be zero. The value of electricity comes from the stock of electricity driven capital goods which consumers are willing to purchase which, in turn, is dependent upon the price of electricity which this equipment consumes.

Put another way, the future demand for electricity is largely a function of its current price and what the electric power industry will build tomorrow is primarily determined by what it is allowed to charge today and what consumers are willing to pay. Indeed, the costs of new generating facilities are so great compared to embedded capacity costs that electric utilities can only afford to build them if customer demand absolutely requires that they be built and customers are willing to pay the costs of building them.

It is also unlikely that a utility will build a major generating facility in the future without some rate base treatment of CWIP--even when everyone agrees that the facility is needed. Let me give you an example of why this is so.

We have made projections of the financial impact of various levels of CWIP included in rate base over the next few years for Central Power and Light Company. CPL is a CSW operating company located in south Texas which is a partner in the South Texas Nuclear project. The projections are based upon the assumption that the company can maintain a constant and satisfactory return on equity during construction generated by a combination of cash earnings and noncash AFUDC. In other words, different levels of CWIP in the rate base will not affect total earnings but they will affect certain critical financial indicators designed to measure the real financial condition of a company.

First, and perhaps most important, the coverage ratio. Companies, such as ours, are required by their agreement with their existing bond owners to maintain a coverage ratio of two times interest payments before additional bonds can be sold to raise cash for construction. What the bond owners are saying by this restriction is, "We want you to have enough income to cover what you owe us twice before you pay income taxes to the Federal Government and before you pay dividends." Also, the calculation must include the interest on the new bond issue as well as the interest on existing bonds. With 50% CWIP included in rate base, which is all the FERC allows, Central Power and Light will have an indenture coverage of 2.12 times interest in 1986, the year before the first STP unit is completed. Put another way, CPL will still be able to sell additional bonds, but just barely. With no CWIP in rate base, CPL will have a coverage ratio of .80 and, in fact, would be below the two times requirement for the three years prior to completion of this unit. This means that CPL could raise no construction dollars by the sale of bonds.

With no CWIP in rate base, perhaps CPL could raise construction dollars through internally generated funds such as depreciation, investment tax credits, or retained earnings? The projections show that, given no rate base treatment of CWIP, internally generated funds would provide 11% of cash construction expenditures in 1984, 3% in 1985 and nothing in 1986. With 50% treatment, CPL is able to provide about 25% of construction expenditures over the three year period by this source.

With no rate base treatment of CWIP, CPL's earning for the three years prior to completion of STP would be entirely composed of AFUDC. This means CPL's earnings would be totally noncash and this does not put CPL in a strong position to go to market and ask investors to buy more of its common stock.

In short, with 50% treatment, CPL could complete its portion of STP though it would be difficult. With no CWIP in rate base, CPL and companies like CPL, in the words of the Vermont farmer, simply "cannot get there from here."

Senator **Chafee**. All right, fine. Thank you very much.
Dr. Draper.

STATEMENT OF DR. E. LINN DRAPER, SENIOR VICE PRESIDENT, GULF STATES UTILITIES CO.

Dr. **Draper**. Good morning, Senator Chafee. I am Linn Draper. I am senior vice president from Gulf States Utilities. My responsibilities include our rates and regulatory affairs activities.

Gulf States Utilities is a medium size electric utility. We serve about a half million customers in Texas and Louisiana. Our revenues last year were about $1.5 billion. Our business is about 43 percent retail business in the State of Texas, about 50 percent retail business in the State of Louisiana, and about 7 percent of our business is wholesale business under the jurisdiction of the Federal Energy Regulatory Commission.

We, like other utilities, are experiencing growth this year. We have seen in our energy sales the first 6 months of this year about 15 percent increase only the same period last year. We, like the Eastern Utility Associates, attribute that primarily to the resurgence of the economy. It is clear that our industrial load is back.

Senator **Chafee**. What percentage of your load is industrial?

Dr. **Draper**. About 50 percent. We have an extraordinarily heavy industrial load along the Texas-Louisiana Gulf Coast, the refineries, the chlorine manufacturers, petrochemical business.

Senator **Chafee**. Do you see much change in individual consumption based on the economy?

Dr. **Draper**. Residential consumption? No. Our residential consumption is—the changes in residential consumption are almost totally attributable to the differential between this year and last year.

Senator **Chafee**. Good times, bad times don't affect it that much?

Dr. **Draper**. Not very dramatically. As a matter of fact, the residential customers——

Senator **Chafee**. Is that true for you, Mr. Eichorn?

Mr. **Eichorn**. No. We see some good due to the economy in the residential area.

Senator **Chafee**. If you are feeling prosperous you turn on the air-conditioning?

Mr. **Eichorn**. That is correct.

Senator **Chafee**. That's those Yankees, they turn it off when times are bad.

Mr. **Eichorn**. Obviously there is some weather oriented usage along with Dr. Draper's comments.

Senator **Chafee**. Sorry to interrupt.

Dr. **Draper**. There are a good many people in Texas and Louisiana that would like to turn it off when times are bad, but that is not the way you live in Texas and Louisiana. It is too uncomfortable. The construction program of Gulf States Utilities is a major activity. As I said, our revenues are about $1.5 billion a year. Our construction program this year will be about $500 million. We are in the final stages of construction of the nuclear powerplant. We have for a number of years gotten construction work in progress to some extent in our rates in the State of Texas, a lesser fraction of construction work in progress in Louisiana.

We view, like Mr. Taulbee, the action of the Federal Energy Regulatory Commission as precedential. We think that the States do observe what happens at the Federal level.

Despite the fact that we have had construction work in progress in our rates for some time, the situation last year for Gulf States was that 70 percent of our earnings were attributable to allowance of funds used during construction; that is they were accounting noncash earnings. Our earnings per share last year were $2.31. If we had not had the accounting earnings for allowance for funds, they would have been $.69 per share. Our return on common equity was 14.7 percent; excluding the allowance for funds or the noncash earnings, our return would have been 4.4 percent. So it is quite clear that the money that is used to construct—or to finance a large construction program has a major impact on the earnings of a company, and it is our belief that if those earnings are recovered currently in the rates, that it is in the best interest of our customers in the long run. In fact, there have been a number of studies done, one in particular by the staff of the Public Utility Commission of Texas in 1982.

Senator **CHAFEE**. I note that on page 2 you say, "three members of the staff." Just out of curiosity, why did you say three members?

Dr. **DRAPER**. It was authored by three members.

Senator **CHAFEE**. How many members are there?

Dr. **DRAPER**. Dozens. The conclusion that that study came to was that over the life of the construction program, that the customers were better off if the current rates included construction work in progress. In fact, it showed that if a customer expected to live within the service area for 6 years, he was better off if those rates were recovered currently.

So it is our belief that it is important that the Federal Energy Regulatory Commission retain the discretion to allow construction work in progress, and we think it would be a grave error to pass legislation that prohibits it. They are allowing us to recover the 50 percent of construction work in progress.

Senator **CHAFEE**. Do you think this would have the same affect that Mr. Taulbee was concerned about?

Dr. **DRAPER**. Yes. We think the States do look to the Federal Government for guidance, although a modest fraction of our business is in the Federal Energy Regulator Commission's jurisdiction. We believe it would have precedential value both in the State of Texas and in the State of Louisiana.

[The prepared statement of Dr. Draper follows:]

Statement of Dr. E. Linn Draper
Senior Vice President, Gulf States Utilities Co.

On H.R. 555, S. 1069 and S. 817
Before The
Senate Subcommittee on Energy Regulation

August 2, 1984

Mister Chairman and Members of the Subcommittee:

I am pleased to have the privilege of appearing before you today to testify on three bills which, if enacted, would make it more difficult for the nation's electric utilities to regain their financial health.

Gulf States Utilities, which serves more than 543,000 customers in Southeast Texas and South Louisiana, endorses the testimony submitted by the Edison Electric Institute and also would like to make a few comments about our company's view of this legislation.

First, there is a fundamental misunderstanding about the term Construction Work in Progress (CWIP). Contrary to what the phrase implies, the inclusion of CWIP in a utility's rate base does not mean customers are providing the capital to build power plants. It simply means they are helping pay the carrying costs on the capital expenditures. The actual investment in the construction project is recovered through depreciation charges after the facility goes into service and is considered in a rate case.

The amount of carrying charges, or CWIP, that is not allowed in rate base is known as Allowance for Funds Used During Construction, or AFUDC. AFUDC is an accounting placebo which enables electric utilities such as Gulf States to appear financially stronger on paper than they are in reality.

This practice means that the carrying charges are accumulated as the project progresses and are added to the final cost of the facility when it is completed. AFUDC increases the utility's reported net income but the earnings are on paper and not real dollars. AFUDC is attractive to regulators because it gives the impression utilities are more profitable than they are.

In Gulf States' case, 70 percent of our 1983 earnings were AFUDC. Without AFUDC, our earnings per share in 1983 would have been 69 cents instead of $2.31. Our return on average common equity last year was 14.78 percent, but excluding AFUDC that figure is a 4.40 percent.

In 1982, three members of the staff of the Public Utility Commission of Texas conducted a study comparing the various regulatory approaches to CWIP. The study's major conclusion was that "Under all circumstances total ratepayer costs are lower over the life of a power plant when CWIP is included in rate base."

The report also examined demographics, migration patterns and other factors commonly mentioned in the CWIP debate and found that "the inclusion of CWIP in rate base is clearly in the best interest of the vast majority of ratepayers in Texas." (The Texas commission has consistently allowed Gulf States a cash return on 50 to 80 percent of our Construction Work in Progress.)

Gulf States is also regulated by the Louisiana Public Service Commission, which looks less favorably on including CWIP in rate base. In the most recent Gulf States rate case decided in that state, the Louisiana commission last December refused to allow any CWIP in the company's rate base. That compares with the commission's previous rate order which Gulf States had interpreted as allowing cash earnings on 15 to 20 percent of CWIP.

AFUDC can be viewed as an IOU which falls due when a construction project is completed. If the debt is paid off as the project progresses, the ultimate cost will be less because interest will not be accumulating on top of interest.

Obviously, CWIP and AFUDC were not major issues when construction costs and interest rates were low. The fact that power plants are now very expensive to build and to finance makes earning a cash return on CWIP more, not less, necessary than ever before.

Gulf States believes the Federal Energy Regulatory Commission as well as the state commissions should allow the inclusion of all CWIP in rate base. But the 50 percent rule is a step in the right direction and reflects nine years of policy development and study which showed that excluding CWIP from rate base was having a detrimental effect on the financial well-being of the nation's investor-owned electric utilities.

In the past, Congress has been extremely reluctant to overturn policy decisions made by federal regulatory agencies. This particular rule was not developed in haste and it should not be reversed in haste.

On behalf of Gulf States Utilities, I urge you to give this rule a chance to demonstrate that it will benefit both electric utilities and their customers in the years to come. Thank you.

Senator **Chafee**. OK; fine. Thank you very much, Dr. Draper. Mr. **Harreld**.

STATEMENT OF C.B. HARRELD, COMPTROLLER, GEORGIA POWER CO.

Mr. **Harreld**. Good morning. I am C.B. Harreld, comptroller, Georgia Power Co. H.R. 555 and the related Senate bills are just not the way to go.

Senator **Chafee**. That's a conclusion. Let's hear the rationale.

Mr. **Harreld**. Those that support the bill are giving us the old baseball, hotdogs, and apple pie routine, let's keep the tried and true approach going, and usually we would be for that because if it's tried and true, it means it works. You've got to remember that the reason things keep working in this country is that we are smart enough to fix them when they are broke, and that is why after nearly 2 years of review, the FERC granted our industry a cash return on half of our CWIP. The old way doesn't work anymore in this case because the economic environment has changed.

Prior to the mid 1970's we could build a plant for about $200 per kilowatt, 4 or 5 percent interest was the money cost, and we could do it in about 3 to 5 years, a real piece of cake compared to today, really no sweat. Today to build a plant we are talking 10 to 12 years. Our money costs are 15 to 16 percent, and our most recent plant cost $1,300 per kilowatt, literally an explosion of cost. But at the same time our rates are based on the old cost, some as much as 30 years ago. When you are trying to build plants at today's cost but you are charging rates based on costs from 30 years ago, you are in a lot of hurt cash flow-wise. We don't even have enough cash to replace the plants that we have now let alone try to build any additional plants. We simply cannot keep costs reasonable when we are trying to build plants unless we get some help.

We are borrowing money to pay the cost of interest on funds already borrowed on the same construction project. We are not talking bricks and mortar cost here, we are talking only money cost.

Now those that favor the bill like to say that if we are granted CWIP in rate base, that we will be encouraged to build unneeded plants. Well, to an old number cruncher like me, Senator, that's funny. That's like saying I've got a passbook account at the bank earning 5 percent interest, and I am so pleased with that income that I go someplace else and borrow money at 10 percent interest to put in that account so I can make some more money. It's just not going to happen. In our case, we are in the 12.23 percent on our rate base, but if I want to build a new plant, I've got to go borrow money at 15 to 16 percent interest. Even if I could take a magic wand and get instant ratemaking, the best thing I can do in that case is to break even. There is just no incentive whatsoever to build an unneeded plant. That is just an old wives' tale that needs to be destroyed.

The other thing is those that favor the bill will say well, we really addressed your problem because if you can show us that you are in severe financial difficulty, we will give you some of the CWIP rate base. That is like a hospital having a rule that says nobody gets in here until they can prove they are about to die. By the time you can prove it and fill out all the forms it is too late, and in our case it is too late. Once we prove we are in this severe financial difficulty, the markets have already adjusted. They don't wait until you prove it. They adjust now, and our costs are higher and as a result our customers are paying more.

I urge you to reject these bills. They are not in the best interest of our country, of our industry, or any of our customers. Thank you.

[The prepared statement of Mr. Harreld follows:]

TESTIMONY OF THE GEORGIA POWER COMPANY

ON S. 1069

"CONSTRUCTION WORK IN PROGRESS
POLICY ACT OF 1983"

PRESENTED BY

C.B. HARRELD
COMPTROLLER
GEORGIA POWER COMPANY

BEFORE THE

SENATE SUBCOMMITTEE ON

ENERGY CONSERVATION AND POWER

AUGUST 2, 1984

Mr. Chairman and Members of the Subcommittee:

I am C.B. Harreld, Comptroller of Georgia Power Company, one of the four operating companies of the Southern Electric System. The Southern System serves more than two million retail and wholesale customers in four states and provides electric power to several other states through bulk power sales. My comments today regarding H.R. 555 present the views of Georgia Power Company on the critical issue of the inclusion of Construction Work in Progress in rate base.

H.R. 555 states on page 1, lines 8-10 and page 2, lines 1-2, "...it is in the public interest that electric utilities have a cash flow adequate to support investments in resources that are in the interest of their ratepayers;" and "it is in the public interest that electric energy services be delivered at least possible cost, and with adequate reliability, and that unnecessary rate increases be avoided..."

We at Georgia Power Company agree with these goals, but submit that the passage of HR 555 will in fact serve as a major factor in keeping such goals from being achieved. We believe that this bill will in fact result in higher rates charged to the consumer.

Without the existence of adequate cash flows to support necessary investments, there will be loss of the reliable electric service that we, as Americans, take for granted. The financial condition of the electric industry did not occur overnight, nor can it be solved quickly. The situation has evolved because the cost of new generating plants and the length of time required to construct them has increased dramatically over the last few years. The reasons for this have been pointed out many times. The fact is that the industry today is substantially different than it was in the pre-oil embargo days. When it took no more than four to five years to construct a plant, and costs were not rising significantly during the construction period, the impact on the utility of not including that investment in rate base until the plant began generating electricity was not severe. In today's world, including Construction Work In Progress (CWIP) in rate base recognizes the economic realities of the world we live in and provides an additional means of allowing the electric industry to return to the financial health necessary for the continued economic growth of our Country.

When CWIP is included in rate base, the signals sent to the ratepayers are a better indication of the actual cost of the energy he is consuming. Rates currently in effect, referred to as cost-based rates, recognize only historical cost. They do not take into consideration the cost to replace the capacity that is being consumed. When the cost to construct the replacement asset is a victim of more than a decade of double-digit inflation, and the period to complete the construction more than doubles, the cost of the new asset is significantly higher than the cost of the asset being replaced. Setting rates based on the old asset's cost sends a false signal to the ratepayers. The inclusion of CWIP in rate base also serves to stabalize rates and avoid the abrupt increases that occur when a major generating plant comes on line.

The inclusion of CWIP in rate base also reduces the cost of the plant over its economical life. Since the investment is earning a current return, the amount capitalized is reduced by the amount of the return. In very large plants with long construction periods, this can be a significant reduction in the capitalized investment. In addition, including CWIP in rate base would tend to assist in the upgrading of the company's securities, resulting in lower overall cost of capital for both the present and future ratepayers.

The inclusion of CWIP in rate base has been an issue in the regulation of electric utilities for many years. In 1981, the FERC issued a notice of proposed rulemaking on the issue in recognition of the fact that the rules in effect at that time were outdated and simply did not work. After almost two years of deliberations and thousands of pages of comments and testimony from interested parties, the FERC issued Order No. 298, which represented a compromise between the opposing parties and allowed utilities to recover a cash return on 50% of CWIP. The order passed unanimously. We firmly believe that the CWIP policy set forth in Order 298 is the result of a fair and objective examination of the issues by an expert agency. Even though we believe that 100% of CWIP ought to be in rate base, the new policy is a substantial and sensible improvement over the old "financial distress" policy as set forth in Order 555.

HR 555 legislatively reverses FERC Order No. 298, essentially reinstating the old FERC Order No. 555, which has already been determined to be inadequate through a lengthy and detailed rulemaking process. It also adds additional very rigorous and complex requirements that basically eliminate the possibilty that any significant amount of "other" CWIP could be included in rate base. The bill also requires a "preliminary adjudicatory hearing on the matter" which will serve to substantially increase the length of time and cost already necessary to settle FERC cases. As we all remember, the FERC's proposed rulemaking on this issue specifically stated that its purpose was "to adopt a rule which best eliminates or reduces extensive and frequently unnecessary litigation ..." If a utility is in "severe financial difficulty", this added delay in receiving rate relief could well result in irreparable harm to the company's deteriorating financial health.

I am not here to repeat all of the arguments for including CWIP in rate base; this has been done many, many times before, and is sufficiently covered in the EEI testimony that has been presented before this Committee. I will state that we are in total agreement with such testimony.

I am here to also state that we strongly oppose the enactment of HR 555 or any similar legislation. Such legislation is not in the best interest of the ratepayer, the stockholder, or the electric utility industry. This legislation only serves to undermine the substantial progress that the FERC has made in updating antiquated regulations which were developed when the electric industry operated in a substantially different economic and financial environment. Allowing the inclusion of CWIP in rate base not only will help the industry to return to and maintain financial health, but will also allow the price signals sent to ratepayers to more closely resemble reality.

The financial health of some companies is improving. This is the result of a combined effort of both the industry and regulators who recognize the need for fair and reasonable regulations which offer the opportunity for fair and reasonable rates of return and as a result of the conclusion of many utilities' construction programs. The inclusion of CWIP in rate base improves management efficiency by reducing the current constraints on raising debt and equity capital. This allows management to pursue the optimal construction program rather than adopting a "capital adverse" strategy. Contrary to a wide misconception that CWIP in rate base encourages the construction of unneeded plants, some utilities which have all or a portion of CWIP in rate base are choosing not to build. Allowing utilities to file to include CWIP in rate base does not change the fundamental rule of utility ratemaking which allows a utility to recover only those costs prudently incurred.

The road to recovery is not a short one, and it will be some time before the improved financial health becomes apparent in improved bond ratings and new issues of stock selling at book value. FERC Order No. 298 was a step in the right direction, and we must not take steps backward by enacting legislation such as HR 555.

Senator **CHAFEE**. Why does it take so long to get these plants built? Is it environmental problems?

Mr. **HARRELD**. That is part of it, yes, sir. Every step of the way now has to be approved by various regulatory agencies.

Senator **CHAFEE**. Is that true of the nonnuclear powered plant?

Mr. **HARRELD**. Yes, but not to the extent of the nuclear.

Senator **CHAFEE**. Who regulates the steam generating plant? Once you get the design you just go ahead and build it?

Mr. **HARRELD**. No, sir. For instance, the Environmental Protection Agency has various regulations which prescribe what kind of plants you can build, what kind of smoke stacks you can have, what kind of pollutants can go into the air. One of the problems is those rules change about every 6 months, and so we have to do a lot of what we call retrofits, which when you have to go tear out what you have already built, it adds quite a bit to the cost and to the time involved.

Senator **CHAFEE**. OK; fine. Thank you.

Mr. Hicks.

STATEMENT OF JOHN D. HICKS, SENIOR VICE PRESIDENT, PUBLIC AFFAIRS, DUKE POWER CO.

Mr. **HICKS**. For the record I am John D. Hicks, senior vice president for public affairs, Duke Power Co., Charlotte, NC. We are one of the larger utilities in the United States, having a mixture of hydro, coal, and nuclear. We serve about 4.6-million people in the Piedmont section of North and South Carolina.

I hope I can make two or three points that may help put these bills in perspective. First, let me remind you that those who support these bills are public power groups who buy power from utilities like my own wholesale, and others who support the bills are consumer advocates in general. Their purpose always, in my 27 years in this business, has been to keep current rates as low as possible now. They perceive that as their job. I don't quarrel with their sincerity, but I certainly quarrel with their logic. It is not their mission or their concern to worry about or fight for long-range power supply, but that is our concern and our obligation. They tell you we are wrong when we say to you with CWIP we could supply power much cheaper to our customers over the long haul. I would like for you to hear from one who has long been a strong consumer oriented judge, one never known to be pro utility.

In late 1981 and early 1982, J. Michael Harris of the New York Public Service Commission and administrative law judge conducted an exhaustive hearing into the subject of long range power supply in New York. He came down squarely on the side of CWIP accounting, and may I quote from his February 1, 1982 order?

> When all pertinent factors are considered, it becomes evident that AFDC policy is undesirable from everyone's perspective, despite traditional thinking on the matter. Consistent adherence to a policy of putting CWIP in rate base over time would beneficially: One, improve the utilites' financial condition when their need to finance is greatest; two, reduce cost imposed on customers substantially and to a greater degree than any other available policy change; and three, eliminate the disturbingly huge and disruptive rate increases necessary under AFDC policy when a major facility goes on line.

While we say CWIP will be cheaper, you hear from proponents of these bills that we fail to take into account the fact that if our customers have to pay us money now during the construction period, they've lost the opportunity to invest those funds and earn a return. That is a fancy theory thoroughly disproved by the Texas Utility Commission staff who conducted the best study on the subject that we know of.

But assume the theory is correct, it is ridiculous as a practical matter. If we place $100 million of CWIP in rate base, it would cost our average residential customer $0.67 per month. We've actually had in rate base $292 million of CWIP, and at the time it cost our average residential customer $1.93 per month. I ask you, is that the kind of money that our customer is going to go out and invest? Of course not. Yet, the $292 million in ratebase substantially helped us build McGuire Nuclear Station which promises to be one of the most efficient in the United States, and build it cheaper.

Passing all of that, Senator, the real issue is not who is going to pay how much and whether sooner or later, the issue is whether we are going to have the most economical and most of all an assured supply of electric power in the future.

Incidentally, Senator, if you are looking at my statement, you won't find this. I am speaking from new notes based on what you've heard here before. My company will never build a very large, most efficient base load unit again without CWIP. The reason is——

Senator CHAFEE. I would be careful about using the word never. Mr. Hicks.

Mr. HICKS. Without CWIP, at least under our current Administration. Our chairman has said so.

Senator CHAFEE. Chairmen come, chairmen go.

Mr. HICKS. He is a young one. He is going to be there a long time after I'm gone. The reason is we simply cannot finance a large base load unit over the long period of construction. Sure, we are going to do the best we can to carry out our public service obligation to meet our customers' needs, but we will have to do it with a relatively small, short construction period, very inefficient units, perhaps even with combustion turbines which are no more than a jet engine driving the generator at fantastically high fuel costs.

I say again the real issue here is whether we are going to have in the future the best and most efficient and reliable power supplies in the United States.

Incidentally, I have always been interested in the fact that the Tennessee Valley Authority, the huge government power agency that supplies all of Tennessee and parts of six other States, and which was created to be a model and a yardstick for us in the private utility business, has for some years used 100-percent CWIP accounting. Not 50-percent as FERC would allow. TVA uses 100 percent. Why? Because that is the efficient way to run a utility system and I applaud them for it.

Senator CHAFEE. And you urge FERC to go to 100 percent?

Mr. HICKS. I am like the previous speaker, if they stick with 50, I don't mind because as I have to say to you in all candor, the passage of these bills would have almost no direct affect upon Duke

Power Co. A minimal portion of our business goes into the rate making process at FERC.

Why am I here? I am here as others have said, because we are terrified over the fact that the passage of these bills would send a negative signal to the North and South Carolina Utilities Commissions where the great bulk of our business is regulated.

We do now have discretionary CWIP in both North and South Carolina. We get some, not all, but some. We greatly feel that through the legislatures or through rulemaking this may change if the Congress speaks. The Congress has a rather terrifying impact on what the states do at times.

In closing let me just say that I beg the Senate not to get into the business of regulating electric rates. Leave FERC and the State Commissions with the flexibility to set rates based upon the economic situation as it exists at the time.

To my prepared statement I attached a well reasoned editorial from the New York Times urging the Senate not to use the same poor judgment they perceived the House used in passing H.R. 555, and we would respectfully urge you, the Senate, to reject all three bills. Thank you very much for letting Duke Power make an appearance.

[The prepared statement of Mr. Hicks follows:]

BEFORE THE
ENERGY REGULATION SUBCOMMITTEE
OF THE
ENERGY & NATURAL RESOURCES COMMITTEE
UNITED STATES SENATE
WASHINGTON, D.C.
AUGUST 2, 1984

STATEMENT OF
JOHN D. HICKS
SENIOR VICE PRESIDENT, PUBLIC AFFAIRS
DUKE POWER COMPANY
CHARLOTTE, NORTH CAROLINA

IN OPPOSITION TO S. 817, S. 1069 AND H.R. 555

Mr. Chairman and Members of the Subcommittee, I greatly appreciate this opportunity to appear before you today to discuss the issue of Construction Work in Progress (CWIP) in a utility's rate base and to explain our opposition to S. 817, S. 1069 and H.R. 555.

For the record, I am John D. Hicks, Senior Vice President, Public Affairs, Duke Power Company, Charlotte, North Carolina. First, a bit of background on me. I am a graduate of the United States Naval Academy and Yale Law School. Following a period of law practice in my hometown of Charlotte, I joined Duke Power where I have served as a lawyer and as an executive for 27 years.

Next, let me give you a few facts about my company. Duke Power is the nation's eighth largest investor-owned electric utility serving approximately 1.4-million customers in a 20,000 square mile area of North and South Carolina — an area known as the Piedmont Carolinas.

We have consistently had the most efficient fossil-fuel-fired generating system in the nation. For 11 out of the last 13 years through 1982 (latest year available), ours has been No. 1 in efficiency in the United States and second in the other 2 years. It has ranked first for the last 9 straight years. In addition, out of a total of more than 2,100 fossil units in the nation, the six most efficient units belonged to Duke Power in 1981 and 1982. Of special importance is that Duke Power was the most efficient overall generating system (fossil and nuclear) in the country in 1981 and was second in 1982.

Duke Power's 10-year-old Oconee Nuclear Station has generated more kilowatt-hours than any nuclear power plant in the United States. The Nuclear Regulatory Commission (NRC) adjudged Oconee the most efficient pressurized-water reactor nuclear plant in the nation in 1982, achieving this recognition for the third consecutive year. The station has placed first or second each of the past 9 years. Through 1983, Oconee had saved our customers $640,592,000 as compared with generation from our Belews Creek coal-fired plant, which is the most efficient in the nation. These savings include all operating and capital costs for Oconee and Belews Creek.

Duke's operating and maintenance expenses are among the lowest in the nation. In fact had Duke been no better than average in building its plants, in its generating efficiency and in operating and maintaining its plants, a rate increase of over 12% would have been required for the company to achieve the same level of operations in 1982. Had we been only average, our customers would have had to pay us $277-million more that year.

Duke's electric rates to consumers are among the lowest on the eastern seaboard and lower than TVA's, often cited as a yardstick. Duke's overall rates are 24.5% lower than the total industry average, which includes all government-owned power.

The average Duke residential customer's bill, as a percentage of the total household budget, has remained about the same since 1955. Dr. Willard T. Carleton of the University of North Carolina, Chapel Hill found that in 1955 Duke's average residential bill was 4% of the average manufacturing wage of a North Carolina worker. In that year, the average household used 468 kwh per month. In 1981, twenty-six years later, he found that the average household bill from Duke Power was still 4% of that year's average manufacturing wage. Yet the average residence used 898 kwh per month in 1981, almost twice as much electricity as in 1955 for the same portion of income.

Dr. Carleton's study has not been updated, but we have every reason to believe that his conclusions would maintain through 1983 when customer residential use had risen to an average of 1023 kwh per month.

Efficient operations mean lower than otherwise electric bills. Also, rates will be lower than otherwise if we can minimize the need to build new, high-cost generating facilities. Toward that end, Duke Power has developed and is pursuing what many have acclaimed as the most aggressive load management program in the United States. Another way to put it is that we are actively preaching conservation, and we are being successful.

We started our load management program in 1975, and with hard work, we have stayed right on our projected goals. To date we have saved 1.4-million kilowatts on summer peak and 2-million kilowatts on winter peak — kilowatts of capacity that will never have to be built. We expect to stay on target toward reaching a 1995 goal of saving over 6-million kilowatts of demand, equating to 6 new large power plants that will never have to be built and billions of dollars of new capital that will never have to be raised to build those plants and will not have to be reflected in electric bills to consumers.

But with the best in efficiency and conservation, we still must build further generating capacity if we are to meet a growing load in the Piedmont Carolinas. Our load growth has slowed to slightly less than 3% per year compounded, compared to 10% per year in the 1960's and early 1970's. That would seem a small rate of growth, but 3% compounded means that we will be serving a load that is 34% greater 10 years from now than today's load. This, of course, will require substantial additional generating, transmission and distribution capacity, which very frankly under current circumstances we may not be able to build.

We will have enough generating capacity for the 1980's. It is the 1990's that give us great concern. We are concerned because if we do not have the ability to meet growing needs, economic development in our part of the Carolinas will come to a halt.

North Carolina needs more and better paying jobs. Our state is committed to the need for further industrial development. The policy of the State is to attract high technology industries, and we are making great efforts to do so. We have a work force of good and capable workers, an attractive climate and a good business environment. What we are missing is an assured supply of electric energy. We cannot succeed in our industrial development without it.

And Mr. Chairman and Members of this Subcommittee, although our fear is for the 1990's, the problem is now! With the long lead times necessary to build generating plants, we will be faced with critical decisions very shortly.

With that background, let me turn to Construction Work in Progress (CWIP) and the bills being considered.

The allowance of CWIP in rate base benefits our customers in three ways. First, the customer pays lower rates over the life of the plant. Second, the customer pays a small increase each year while the plant is under construction rather than a very large one when the plant goes into service. Third, it will help to assure an adequate supply of electricity in the future.

Without CWIP in rate base we must finance a generating plant over its long period of construction with no revenues to pay the interest and dividends on the securities sold to construct the plant. We get the funds to pay interest and dividends by selling more securities and then more securities to carry those just sold and so on throughout the 12 or so years of construction. All of these additional securities are added to the cost of the plant. Without CWIP the plant will come on the line at a cost of up to 40% higher than with CWIP, and this higher cost is reflected in future electric bills throughout the life of the plant.

We have calculated that the cost of our new McGuire 1 nuclear unit that is now in service is 30% higher than it would have been had we had CWIP during the full period of that unit's construction.

The very respected accounting firm of Arthur Andersen & Company made a study of our McGuire Nuclear Station with and without CWIP. It shows that over the life of the plant our customers would pay us $1.43-billion in higher rates without CWIP than had the plant been built with CWIP continuously in rate base. Attachment 1 is a bar chart illustrating this conclusion.

With CWIP, rate increases in the future will be much smaller in size -- probably no more than tracking inflation. Our customers, we believe, can understand and tolerate small increases. It is the large 20% to 25% increases caused by a whole plant coming on the line that our customers can never understand. But that is what happens when you don't have CWIP in rate base. This is illustrated by Attachment 2.

Administrative Law Judge J. Michael Harrison of the New York Public Service Commision has not been known as pro-utility and quite to the contrary, has been very pro-consumer. Yet in a hearing on long-range financing plans of electric utilities, he came down squarely on the side of CWIP. I quote from his February 1, 1982 order:

> "When all pertinent factors are considered, it becomes evident that AFDC policy is undesirable from everyone's perspective, despite traditional thinking on the matter. Consistent adherence to a policy of putting CWIP in rate base over time would beneficially: (1) improve the utilities' financial condition when their need to finance is greatest; (2) reduce costs imposed on customers substantially, and to a greater degree than any other available policy change; and (3) eliminate the disturbingly huge and disruptive rate increases necessary under AFDC policy when a major facility goes on line."

[AFDC policy is the system without CWIP and which requires that cumulative interest and dividends be added to the capital cost of the plant and not be collected during construction.] I have attached his complete statement on CWIP to my written presentation (Attachment 3).

Setting to one side the fact that CWIP will mean lower electric bills for customers, there is a much more compelling reason why our customers should desire — even demand — that CWIP in rate base be allowed. That is the assurance that there will be an adequate supply of electric power in the years ahead. Prosperity and better jobs for themselves, new jobs and new homes for their children and grandchildren depend upon the economic growth we hope for in the Carolinas. For this we must attract new industry and encourage the expansion of existing industry. This cannot occur without an adequate supply of electric power.

We are frequently receiving inquiries from companies about locating new manufacturing facilities in the Duke Power service area. Uniformly their concern is not price but whether we can assure them of an adequate supply of electricity in the future. We have to tell them that under present circumstances we cannot guarantee adequate power beyond the mid-1990's.

We think that CWIP is warranted for all of our investments made to serve our customers. However, it is especially critical in the case of generating plants. It is these which take so long to build, are so costly and are so difficult for us to finance.

Investors do not have to place their savings in Duke Power, and frankly, I do not believe under present circumstances that they will be willing to loan us the billions of dollars we will require to carry on our needed construction program. Or if they will, they will demand such a high return that we will have to sell many millions of shares of common stock below book value, as we have done this past decade. This we cannot do. Each time we sell common stock below book value we dilute the value of stock owned by present stockholders. If this is continued over a long period of time, it would lead to bankruptcy of the company. If enough common stock is sold below book value, it's simply a matter of time until the last new issue sold will bring in only enough funds to pay dividends on the outstanding shares, and then you're done!

To be willing investors, new investors must be able to rely upon the stability of the policy toward utilities of the states in which we serve and the federal government. They must have confidence that their investment will not be diluted and that they will have reasonable assurance of a fair return. Were any of the bills being considered to become law they will have no such assurances.

From July 1977 until June 1982, CWIP in rate base was required by statute in North Carolina. On June 15, 1982, the Legislature changed the statute to make CWIP discretionary with the Utilities Commission. That change caused a panic on Wall Street two days later with respect to Duke Power's common stock. Trading in our stock did not open on the New York Stock Exchange until 2:00 p.m., and when it did, the opening price per share was down three-fourths from the day before. In 4 days our common stock fell 8%. That may not seem much, but it represented a $163,257,000 loss in value to our shareholders. This is a clear indication of how sensitive our vital money market sources are to the CWIP issue.

Since June 1982, the New York Stock Exchange Utility Index has risen 17.3%. Duke Power's stock, however, has increased only 7.9%, less than half as much. While other considerations may have been involved, we feel quite sure that the uncertainty with respect to CWIP in North Carolina rate cases has remained a significant factor in investors' perception of our stock.

Were any of the bills to pass, it would have little direct effect on Duke Power. The wholesale portion of our business regulated by the Federal Energy Regulatory Commission (FERC) impacted by the bills is very small. However, passage of such legislation would send a very negative signal to utilities commissions and legislatures of North and South Carolina as they consider the rates we are permitted to charge our retail customers, which is the vast bulk of our business. It is important that we retain a reasonable assurance that the state commissions and legislatures will not either administratively or legislatively arbitrarily exclude CWIP from the rate base. They may do just that if the Congress indicates endorsement of this concept by way of the proposed bills.

We will desperately need some CWIP in rate base. Duke Power does not expect to be able to build any large power plant without it. It will be virtually impossible to raise capital over an extended period of construction with no return on that capital, without placing the company in a serious financial position.

In a January 1984 study Dean Witter Reynolds Inc. estimates that without CWIP in rate base the 80 major electric utilities in the nation will have to raise over $162-billion to carry on the necessary construction program over the 5-year period 1983 through 1987. We simply do not believe it possible for the industry to raise funds of this magnitude.

We know the people of North Carolina and South Carolina need jobs, now and in the future. We respectfully submit that CWIP for generating plants is one necessary element that must be available if we are to build the generation required for economic growth in our states.

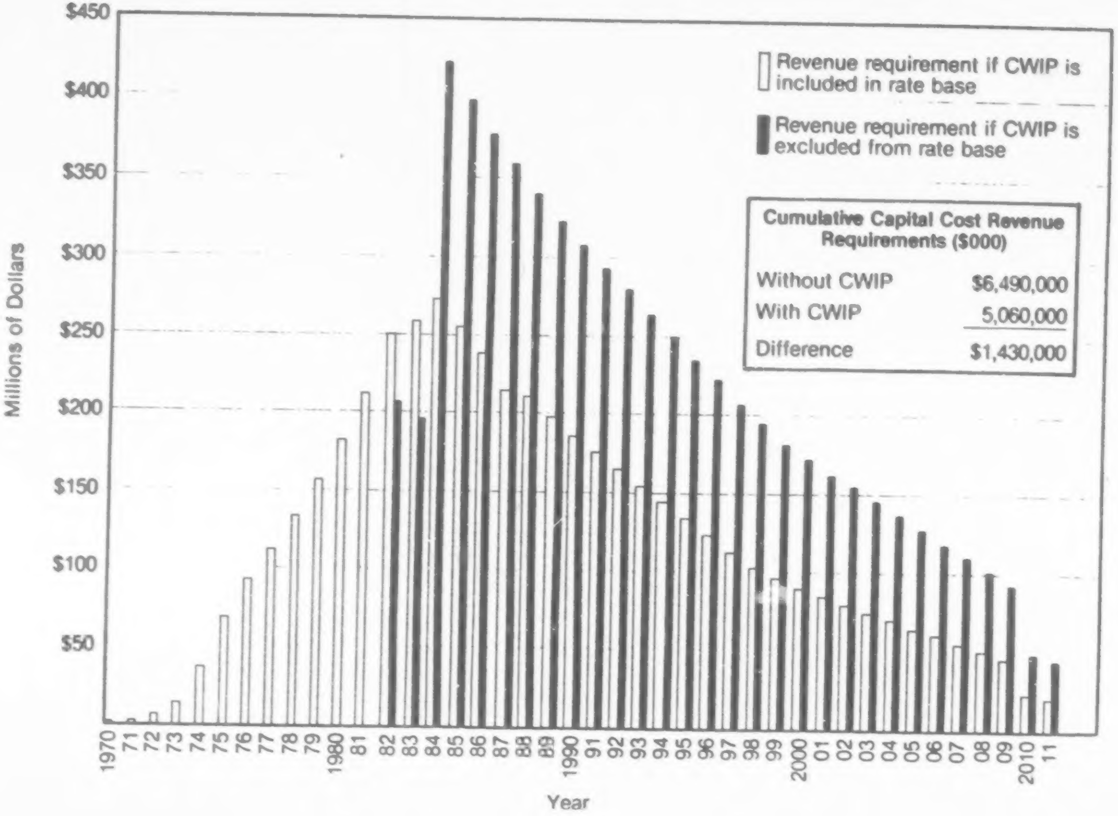
We respectfully urge your rejection of S. 817, S. 1069 and H.R. 555, which, for all practical purposes, prohibit FERC from allowing any CWIP in rate base. We further urge that the Congress not get into the business of regulating rates, and leave FERC with the flexibility to make rates based upon changing circumstances in the economy.

To my printed statement I have attached a well-reasoned editorial from the February 13, 1984 New York Times criticizing the House action in passing H.R. 555 and urging the Senate not to come to a similar judgment (Attachment 4).

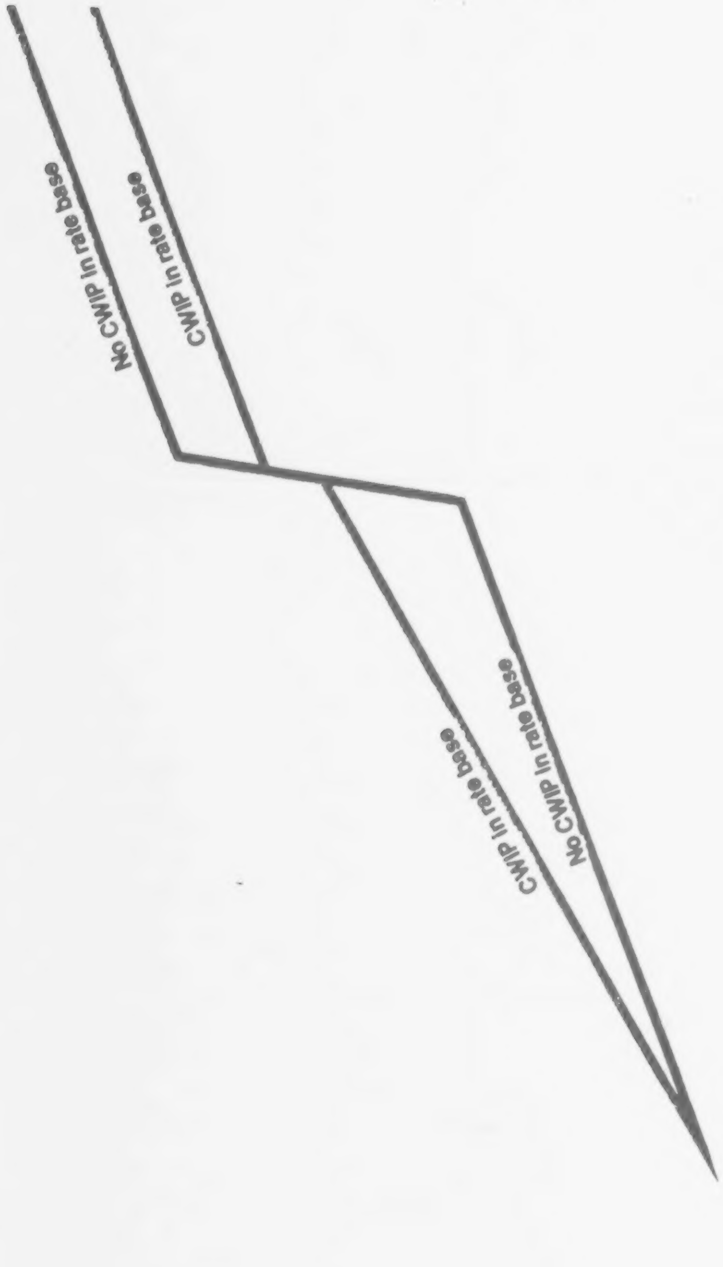
Again, thank you very much for allowing me to make this appearance and express these views.

Attachment 1

Revenue Requirements for McGuire Nuclear Station



Attachment 2



Attachment 3

February 1, 1982

Excerpt from order of
Admin. Law Judge J. Michael Harrison
New York Public Service Commission
Generic Hearing on N.Y utilities long
range financing plans.

CASE 27679

assessments accordingly. They could be used to increase a company's effective leverage, even in some cases beyond limits imposed by indenture restrictions. But as we have already seen, and as Staff has argued, increasing equity ratios for many of the companies is the approach which will increase financial viability and tend to minimize cost over time. There really is no substitute for an optimal capital structure, and greater use of exotic financings moves in the wrong direction. Moreover, virtually all of these approaches carry a higher cost rate, typically the prime interest rate, and therefore are more costly than traditional long-term debt issues. In large measure, this must explain why financially viable companies rarely employ exotic methods, and why they typically have been used in the last resort, only when the more reasonable traditional financing methods were unavailable. Alternate financing methods should be used only in the rare cases when cost savings can be obtained. Their extensive use as a matter of general policy can only serve to increase costs and rates over time, contrary to the ratepayers' interests.

CWIP in Rate Base

The choice between placing CWIP in rate base ("CWIP policy") or capitalizing financial charges incurred during construction for recovery from customers only after facilities are placed in service ("AFDC policy") is the most significant policy option before the Commission in this proceeding. Indeed, the financial problems of the companies are directly attributable to (1) an inability to earn required returns and (2) large non-cash earnings balances brought about by an extensive application of AFDC policy. Were it not for these two realities, the companies would be in good financial condition.

Under AFDC policy, financing charges (equity return, preferred dividends, and interest on debt) are treated as an element of an assets' underlying cost. During construction, AFDC charges on CWIP balances are added to CWIP balances each year, effectively compounding these capital charges rather than paying them on a current basis, until the asset goes into service. AFDC appears on annual income statements as non-cash earnings.

For traditional reasons which will be highlighted shortly, CPB and Staff oppose placing CWIP in rate base -- CPB altogether, and Staff except in anticipation of emergency situations where no other remedy will suffice. The companies maintain that a general policy of CWIP inclusion in rate base is supportable but, understandably, they argue only for enough of such relief as necessary to preserve their financial viability.

There is no controversy about the relative financial implications of AFDC policy versus CWIP policy. The substitution of AFDC earnings for cash earnings reduces cash flow available for shareholder dividends and interest, and it does so at precisely the time when the need for external funds is greatest. Through the reduction or elimination of retained earnings, internally generated funds evaporate as a source of capital, effectively increasing external financing requirements, again at precisely the time when external fund requirements are already at their highest level. In extreme cases, companies with large construction programs are forced to borrow money to pay common equity dividends.

For these reasons, as Staff witness Bronner pointed out, an increase in construction activity and the proportion of AFDC earnings is "an event not favored by investors" (S.M. 411). As Mr. Bronner also pointed out, "a large construction program can prohibit a utility from issuing long-term debt" (S.M. 412) under AFDC policy, because with large amounts of non-cash earnings, mortgage indenture limitations can very quickly become financially limiting factors. Understandably, AFDC policy results in higher capital costs. The effect on the cost of common equity cannot be measured with precision for an individual company, but company witness Roseman demonstrated that the effect of present levels on the cost of debt for the New York utilities would be about "the equivalent of a full [bond] rating grade" (S.M. 2984).

The reluctance of regulators to place CWIP in rate base is premised on the view that "today's" ratepayers are treated inequitably if they must pay financial charges, even though these charges are currently due, on plant still under construction. It is posited that plant under construction does not serve current customers. This viewpoint, however, proceeds from fairly narrow concepts of service and public interest. Most ratepayers are not just current-period consumers of electricity; in fact they intend and expect to be using electricity over their lifetimes. Even customers who do not expect to be on the system for very long will have an interest in the future provision of electricity if, for example, they have houses or other real property to sell. Moreover, when all of a company's facilities, both in service and under construction, are considered together, it becomes unclear who is benefitted by the consistent application of AFDC policy, if anyone.

It is clear, however, that AFDC policy is economically inefficient. A major generating plant, under construction for a number of years, does not exist economically until it goes on line. At that point, its huge investment enters rate base in one lump, resulting in a major disruption in service rates. To make matters worse, this huge lump is swolen with accumulated, compounded AFDC charges which, if a plant takes long enough to build, can constitute as much or more than 50% of CWIP balances going into rate base. Customers are not prepared for the shock of such a rate upheaval, for they had been given the impression that the real capital cost of service was declining when, in fact, it was not. This lumpy pattern of rate increases is undesirable, and can contribute to lumpiness in load growth and other undesirable consequences for local economies.

Consideration of a single facility from the year in which capital is first committed until its retirement shows that AFDC policy greatly increases its total nominal cost. Moreover, its real cost, that is cost measured in dollars of constant value, is also greatly increased by AFDC policy. This is because consumers provide an additional real return for the privilege of deferring capital charges. Much attention has been focused in the literature, and to some extent in this proceeding, on "present value" analysis. That is, an attempt is made to determine whether consumers should favor cost deferrals through AFDC policy, despite the higher long-run real cost of the facility, because they would be better off putting their funds in alternative investments.

The "opportunity cost" rate at which consumers would be indifferent between CWIP policy and AFDC policy, vis-a-vis a particular facility, is known as the "internal rate of return" (IRR). If customers expect to be able to earn more than the IRR in an alternative investment, one of equivalent risk to the "investment" in financing charges under CWIP policy, they will prefer AFDC policy. Otherwise they will not.

The IRR under any reasonable set of assumptions will not be appreciably different from the AFDC rate. While the AFDC rate represents the return to be paid to the company, however, consumers must achieve such a return on an after-tax basis to meet opportunity cost conditions. Thus, the IRR represents a very high opportunity cost rate for consumers, one which can be achieved, if at all, only at very high risk.

While present value analysis suggests that most consumers would not favor AFDC policy as to an individual facility, in the final analysis, present value analysis is not the ultimate consideration. At any point in time, total cost includes the cost of a host of facilities at various points in their service lives, or still under construction. Because consistent application of AFDC policy results in a higher real cost for all facilities, the ultimate effect of AFDC policy is simply higher rates over time, and at almost all particular points in time. This fact is demonstrated both by a hypothetical example of a utility system, based on Mr. Bronner's generic CWIP study, and also by results projected for the various companies in their fifteen-year plans.

The argument that AFDC policy may be required, despite its cost, to insure utility company efficiency is unpersuasive. Other approaches, such as major facility certification laws, management audits, or incentive rates of return, would provide as much or more protection in this regard, and at much lower cost.

When all pertinent factors are considered, it becomes evident that AFDC policy is undesirable from everyone's perspective, despite traditional thinking on the matter. Consistent adherence to a policy of putting CWIP in rate base over time would beneficially: (1) improve the utilities' financial condition when their need to finance is greatest; (2) reduce costs imposed on customers substantially, and to a greater degree than any other available policy change; and (3) eliminate the disturbingly huge and disruptive rate increases necessary under AFDC policy when a major facility goes on line.

There is only one drawback to switching to a policy of full CWIP in rate base. Today's customers (and this is the only sense in which distinguishing "today's" customers from others is especially sensible) would continue to be saddled with the detrimental effect of the prior application of AFDC policy at the same time that AFDC benefits -- the deferral of costs -- are lost. Even so, as the study of NYSEG's fifteen-year plans suggest, the additional short-run cost is modest compared to other viable options, and rates will become lower than otherwise necessary fairly soon, by 1986 or 1987. Thereafter, consistent adherence to CWIP policy will keep rates lower. The same is generally true for the other companies which have substantial upcoming financing requirements. Conversely, adherence to AFDC policy, at today's relatively high interest rates, would have serious consequences for rates and for the public interest in just a few years. Because of the switchover problem, however, and the effect that new tax normalization requirements will have on rates over the balance of this decade, it is recommended that the Commission move to a policy of full CWIP inclusion somewhat gradually, over a 3-4 year period. But it would be inappropriate for the Commission, under any circumstances, to reduce amounts of CWIP in rate base below levels already included, unless total CWIP balances fall below such levels. When that point is reached, 100% CWIP in rate base should be the norm thereafter for the company in question.

Tax Normalization

When there are timing differences between the recognition of expenses for ratemaking and tax purposes, a "normalization" ratemaking policy defers the tax savings associated with the expenses to the time when the expenses are recognized in rates. The alternative policy, "flow through", recognizes only current income tax expense for ratemaking purposes, creating a temporal mismatch in rates between the expenses and their tax effects. Normalization is theoretically correct and equitable, as Staff and the companies acknowledge and as the Federal Energy Regulatory Commission discussed in great detail in an extensive rulemaking investigation.

The Economic Recovery Tax Act of 1981 (ERTA) dramatically changed the scope of normalization issues in this proceeding by requiring full normalization treatment of investment tax credits and the timing difference between book and tax depreciation expense. The new Accelerated Cost Recovery System (ACRS) also permits more rapid depreciation of most large facilities with longer service lives, such as generating facilities, going into service after December 31, 1980. ACRS therefore tends to increase timing

Attachment 4

The New York Times

Founded in 1851

ADOLPH S. OCHS, *Publisher 1896-1935*
ARTHUR HAYS SULZBERGER, *Publisher 1935-1961*
ORVIL E. DRYFOOS, *Publisher 1961-1963*

THE NEW YORK TIMES, MONDAY, FEBRUARY 13, 1984

Pay-As-You-Build Power

"CWIP" could be the unintentional witticism of a bad speller. Actually, it's an acronym for "Construction Work In Progress" fees, an idea at the core of a debate between consumer groups and electric utilities. Last week the House joined the battle, approving a bill that would make it difficult for Federal regulators to order consumers to pay any portion of building power plants before they begin operation.

That sounds fair: Why should consumers pay for what they're not yet getting? But the issue is more complicated than the House acknowledges. A wise Senate won't rush to similar judgment.

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Electric utilities typically finance construction with a combination of borrowing and shareholders' investments. Routinely, only when the plant is in use have regulators allowed the utility to recover the investment and accumulated interest by including them in the rates charged to customers.

Until the last decade, that system seemed to work. Plants got built and the users of the power eventually paid the bill. But under the stress of exploding costs and uncertain demand, the system began to break down. Many private utilities complain that they have great difficulty raising the sums needed to build either nuclear or coal-fired plants. And once the plants are finished, they contend, consumers resist the big overnight rate increases needed to cover the accumulated cost.

That does not trouble people who hate electric utilities the way farmers hated railroads in the 19th century. It also suits more thoughtful critics who argue that utilities spend too much effort building hardware and too little encouraging energy conservation. These critics have usually persuaded state regulators to forbid a phasing in of the construction costs, to deny all increases until new plants are actually functioning.

But last year the Federal Energy Regulatory Commission pressed for a compromise by invoking its control over rates for power sold interstate by one utility to another. It abandoned a rule requiring utilities to prove hardship before they could recover any capital costs during construction. It said they could now put half their interest costs into the rate base, as they are incurred.

Hence "CWIP" and the appeals for Congress to forbid the change. The critics are right to say that many utilities prefer selling electricity to conserving it. They are right to say it is often cheaper to insulate homes and buy more efficient appliances than to build more generating capacity.

But resisting CWIP is a crude conservation strategy. Denying pay-as-you-build charges makes it hard or impossible to construct essential power plants as well as superfluous ones. By reducing the credit ratings of utility companies, it also raises the cost of the plants that are finally completed.

America's electricity system was built by private monopolies overseen by public regulators. But now that a single plant can cost $5 billion — and be deemed unsafe or uneconomical once completed — the private-public relationship breaks down. The pattern of regulation makes it really a public system that raises capital funds in the private market. Where the public wants more power, it cannot evade the costs of expansion. It can only hamper expansion and pay even more in the end.

Senator CHAFEE. Thank you very much. I find, like you, I tend to characterize editorials as well reasoned when I agree with them. Mr. O'CHESKEY.

STATEMENT OF FRED O'CHESKEY, MANAGER, GOVERNMENTAL RELATIONS, PUBLIC SERVICE CO. OF NEW MEXICO

Mr. O'CHESKEY. Thank you, Mr. Chairman. My name is Fred O'Cheskey and I am the manager-governmental affairs for Public Service Co. of New Mexico. Just to keep things in perspective, we serve about one-half of the citizens of New Mexico, a very small State which only has about a 1.3 million in population total.

I appreciate the opportunity to speak on our position to these three bills. We have the same concern as the other speakers, that this would set a precedent for State Commissions. We have a very small wholesale power sales which would be affected directly by the FERC rule.

Proponents of the measure have generally described the bills as benefiting consumers, and I share the same doubts that the other speakers have, so I won't go into detail on that including the rate-shock problem and other negative affects which I believe will happen to consumers with passage of these bills.

One thing I would like to point out, Mr. Chairman, this whole discussion about CWIP has been couched in terms of the consumers' loss if the utilities win. I see the present rule that FERC has developed providing for 50 percent of CWIP treatment. They had several hundred witnesses. They spent several years developing this, and I see this rule as a win-win situation which they developed in a true spirit of the way regulatory agencies should operate. The utilities win a little bit in the discussions, the consumers win, so it's a happy medium and I would hate to see Congress upset that balance which is developed.

I think both groups are winning under the FERC rules. They were developed after discussions. Probably neither party likes the rule as such which probably is a good solution to the problem, and I would like to see that untouched as I think the other panelists would agree for the most part.

So I think generally let's leave it as a win-win situation. My company is one of those who sought back in 1978 on a 1978 case to have FERC apply the hardship rule. We lost. Since that time our bonds have been downgraded twice, not only because of the hardship at that time, but because of our interest in the nuclear plant which the market has reacted to. But we were unable to convince FERC under the old rule that we had a financial hardship at that time.

So generally you've had very good coverage of the consumer issues, and we feel in the long term that the inclusion of CWIP in rate base helps the consumer, and also can help the utility. The consumer will have to pay a very large increase when rates go into effect—are all rolled up and put into the rate base causing the rate shock if these bills were to pass. I think it would be a very major negative impact on consumers generally.

I appreciate the opportunity to speak here, Mr. Chairman, and I have kept it as brief as possible.

Senator CHAFEE. Thank you, Mr. O'Cheskey.

[The prepared statement of Mr. O'Cheskey follows:]

TESTIMONY OF FRED O'CHESKEY
Public Service Company of New Mexico
Senate Energy and Natural Resources Committee

AUGUST 2, 1984

Mr. Chairman and Subcommittee members, my name is Fred O'Cheskey and I am Manager of Governmental Relations for the Public Service Company of New Mexico (PNM). PNM serves approximately one-half of the electric consumers in the state of New Mexico. I appreciate the opportunity to speak in opposition to H.R. 555, S. 817 and S. 1069, each of which would nullify the recent FERC Order 298 regarding treatment of the inclusion of Construction Work in Progress (CWIP) in the wholesale electric rate base.

The above three anti-CWIP bills would, if enacted, eliminate the FERC rule which permits electric utilities to include up to 50 percent of CWIP in wholesale rate base subject to certain restrictions. Additionally the bills would severely restrict the use of CWIP in rate base by requiring a stringent "severe financial distress test" to be imposed by FERC.

Although the proponents of the measures have described the bills as benefiting consumers, I am not convinced that this is the general result. On the contrary, I feel that the result of such legislation would be higher consumer electric bills in the long term. The measures at hand would provide a reduction of rates that would otherwise be paid today, but this would only be a temporary situation. Over the longer term, the cumulative total of ratepayer payments would be much higher.

Admittedly, ratepayers would begin to pay for plant interest costs before it is "used and useful," but is it not worth it to save customers millions in total dollars in the long term?

Not allowing utilities to recover finance charges while a facility is being built will result in "rate shock" to electricity consumers upon completion of a new generation plant. This is because the interest charges are accumulated during the eight to ten years of construction of a plant and then placed in rate base all at once, thereby causing a "rate shock" when the plant starts operation.

With the general benefits to ratepayers in mind, arguments could be made that if we have any legislation, it should be to encourage CWIP treatment because of its obvious customer benefits.

Although it is difficult to separate benefits to customers generally from benefits to utilities, the CWIP issue can be a "win, win" situation. Ratepayers "win" as has already been discussed but utilities are strengthened and can also "win". Inclusion of CWIP in rate base is a cost effective option available to regulators to provide electric utilities with better cash flow to assure access to capital markets at reasonable terms.

CWIP recovers, during construction, only the utility's cost of financing a plant, that is, the interest charges. CWIP does not include any of the principal cost of the plant. If these interest costs are not recovered as they are incurred, they pyramid over the years because the company must borrow money just to pay for them. Compounding these extra expenses is the cost of this borrowed money. A company which cannot pay such interest expenses as they occur, is seen by rating agencies to be a riskier investment and its credit is often downgraded. The lower the credit, the higher the interest costs a company must pay to borrow money; hence one is ultimately faced with even greater costs in getting energy to the customer.

The FERC policy on CWIP (Order 555) was established in 1976 and was extremely restrictive in terms of what was allowed. Under this policy, CWIP was allowed in rate base only for expenditures on pollution control and fuels conversion plus additional amounts as might be allowed by the Commission in cases of undefined "severe financial distress". The terms of this rule relating to severe financial distress were so restrictive as virtually to exclude the possibility of including CWIP in rate base for financial reasons. Only one company has been permitted to collect a return on CWIP (subject to refund) under this rule.

My Company was one of those who sought to have included in its rate base, total CWIP costs under the exception for utilities in "severe financial difficulty". This occurred in a rate case involving a 1978 test year. At that time, PNM anticipated incurring total construction expenditures of approximately $1.2 billion (including AFUDC) of which approximately $1.06 billion would constitute cash expenditures. At the same time, PNM projected some financial difficulties as evidenced by the following adverse financial indicators.

(1) Internal cash generation: The Company calculated that in 1977 it generated only 13% of its cash construction requirements internally, compared to 39% for the electric utility industry as a whole. For the 1978-82 period, it was forecast that PNM will achieve a rate of 18% compared to 40-50% for the entire industry. This level was too low to support a continuation of PNM's AA/Aa (Standard & Poor/Moody's) bond rating at that time.

(2) Interest coverage ratios: PNM's projected interest coverage ratios were lower than industry norms and would not support an AA/Aa bond rating, which meant an impending downgrading of PNM's bonds.

(3) A decline in return on common equity from 10.9% in 1973 to 7.6% in 1977, forcing sales of common stock at prices below book value, diluting existing shareholders' equity, and further discouraging investment.

(4) Without improvement in the above items, PNM's bonds would be downgraded, which would increase capital costs and eventually lead to an inability to finance PNM's construction program through issuance of new securities.

Even with the very negative financial indicators, the FERC denied the inclusion of CWIP in PNM's rate base. As FERC tried to apply the financial distress test for inclusion of CWIP in rate base on a case-by-case basis, they found that this led to endless arguments over the nature and extent of a particular utility's financial distress. As stated earlier, only one utility obtained permission from FERC to include CWIP in rate base under a condition of financial distress during this period, notwithstanding the electric utility industry's worsening financial situation. Based on this experience, two years of careful study, and exhaustive comments from more than 200 interested parties, FERC developed the current rule. This rule recognizes that exclusion of CWIP from rate base was unsound regulatory policy; admits the futility of trying to define "severe financial distress"; and compromises the various interests on the issue of including CWIP in rate base. Passage of the legislation in question would set a dangerous Congressional precedent of intervention in resolving specific controversial regulatory issues instead of honoring the specialized administrative agency and adjudicatory procedures established by Congress to address and resolve such issues.

In conclusion, we feel that in the long term, including CWIP in rate base means lower rates for consumers. Moreover, inclusion of CWIP in rate base assures the electric utility industry's financial integrity and increases its ability to provide adequate and reliable electric service at the lowest possible cost to its ratepayers. On the other hand, passage of the anti-CWIP bills would benefit the short term interests of a minority of the nation's ratepayers. These bills would be harmful to most ratepayers' long-term interests because:

1. The customer pays a very large increase in rates when new plants go into service,
2. The utility's cost of debt and equity is higher,
3. Electricity consumers will pay higher rates over the life of the plant.

Again, Mr. Chairman, I appreciate this opportunity to speak to the Subcommittee and that concludes my remarks.

Senator Chafee. Let me just say this to Mr. Hicks and others; Mr. Hicks I think said he was terrified of the affect on the State regulatory commission if this legislation should pass. However this was the rule up until March or May of last year,of 1983, and obviously the States' utilities did not fold up. In other words, there was no CWIP under FERC until a year ago.

Mr. Hicks. That's true. That's only FERC's rule. I am worried about the Congress speaking. The power that you have when you speak through legislation is immeasurable. It scares us or we wouldn't be here.

Senator Chafee. Well, we're flattered.

Let me ask you another question, those that have spoken, of the points you've made is— I think Mr. Harreld made this—that it is ridiculous to suggest that utilities are careless about going out and adding extra capacity needlessly; that the cost of borrowing is so monumental that it is something you can't consider and you don't go into it unless it is absolutely necessary.

I have here a chart which shows nuclear units ordered and cancelled in each year 1972 to 1982—Well, 18 were cancelled in 1982, and it seems to me that this was 21,000 megawatts. Doesn't that illustrate that at one point you thought you needed all that power and then went on to cancel?

Mr. Harreld. In our case in Georgia, we have had several plants on the drawing board that were ultimately cancelled. What happens, Senator, is because it takes so long to build a plant, we have to try to project right now how much power our customers are going to want 12 years from now, and we have to start to meet that now. If we wait until we can see what is going to happen then it's too late, the only way we can meet it then is with some of these short-term solution with very high fuel cost which would not be the right answer.

So what happened in our case, and I think is true generally, is that in the early 1970s we were projecting growth at 8 to 12 percent a year; and if you have ever run that kind of growth out, it is a tremendous jump over 10 years. What actually happened was that our growth turned out to be about 3 percent a year after the 1974 oil embargo, so we had to do various things, extend some units, cancel some units, sell more power. But there is still no incentive, no economic incentive for us to build unneeded plants.

The best way for us to make money would be to stop building plants and let somebody else in the future worry about what was going to happen to the customers 20 years from now, and let's just run the system we've got now and get as much out of it as we can and then retire.

Mr. Hicks. There is a misconception abroad that we sit back inhouse and decide to build a big powerplant for whatever reason, to make money or whatever. It doesn't work that way and I assume this is all across the country. We have our own forecasters, but the Utilities Commissions have their forecasters and staffs, too. We have to go before them to get a certificate of convenience and necessity to build any powerplants. Full hearings are held, full participation by the consumer groups and others. Actually the plans that we cancelled were started at a time when our Utilities Commission says you are not building enough and urged us to go forward with more units. We said no, we're not going to do it because our forecasts, we believe, are better than yours.

Senator CHAFEE. OK, thank you.

Mr. Munsey.

STATEMENT OF EVERARD MUNSEY, EXECUTIVE DIRECTOR, PUBLIC POLICY, VIRGINIA ELECTRIC AND POWER CO.

Mr. MUNSEY. To follow up on that point, the units that we've cancelled were planned and committed when our load growth was 11 percent a year, and that meant that we were struggling to keep up with the expansion of demand.

It is true, of course, that we did not foresee the events of the 1970's including the OPEC embargo and the surge of oil prices which had a major impact on the growth of electricity demand. Those units were cancelled, but those cancellations themselves are exactly one of the reasons that utilities will be so reluctant to make commitments to new capacity in the future.

We have units in the cancellation determination where our decisions were found to be prudent in every regard, and yet because we have extended amortization of our investment in them and no return on the unamortized balance, the company and its stockholders are bearing a very heavy penalty for those cancellations. So we have a very strong incentive never again to get into that kind of a situation. It is that increase in risk that is one of the four major factors I think that means utilities will not, as the critics say, rush out and build any plants, and particularly large long lead time plants just because they have CWIP.

Vepco, to position it, is the largest utility serving Virginia. We serve the bulk of Virginia, northeastern North Carolina, and a small portion of West Virginia, about 1.4 million customers.

We have, under the discretionary rule that Mr. Hicks mentioned, CWIP in our North Carolina rates. Beginning in 1981, Virginia has provided for phase-in of 100 percent CWIP on new projects, but even with those State provisions for CWIP, we are doing our utmost to defer the need to build. Once we finish the bump storage project that we have underway in western Virginia now, we will have no new construction in progress for the first time in 40 years, and we would like to keep it that way for as long as we can. The reasons besides increased risk are the fact that our stock is still selling below its book value so that if we finance capacity again, we will have renewed dilution of our stock. We are not earning a market return on our investment, so that in effect we will lose money on any investment we make, and because of this the marginal cost the new capacity is higher than the average cost of capacity that is reflected in our rates now. New capacity will tend to raise rates and that is a problem for any utility.

So for those four reasons we are trying to avoid new construction. We are seeking purchases from utilities elsewhere in the country that have capacity that they don't need for the time being. We are extending the life and renovating existing units. We are improving our existing units and increasing their output. We found ways to reduce our target reserve margin without compromising the liability. We are carrying out a study, on alternatives, where we are looking at four demand side alternatives for non-conventional fuels, and four new technologies with the hope that some of those new technologies will allow us to make investments in shorter lead time, smaller capacity additions.

Senator **Chafee**. What do you do to encourage conservation?

Mr. **Munsey**. We have, of course, the Energy Audit Program. We have a program of energy saver homes which we are promoting. We have a program of—I suppose it is really a load management program by remote control of water heaters to avoid peak demands. We have about a half-dozen programs in place that are intended to encourage conservation, and one element of the alternative study that I mentioned is the examination of additional conservation programs that we might employ. We intend to compare the demand side alternatives and conservation and load management with the various supply side options that we are considering in this study, and with the conventional coal unit, which is really the only conventional option that we feel is left to us, and choose the options that best serve the customers, that is at the lowest cost. But without CWIP in the rate base, it seems to me that we face a very strong disincentive to build a large central station unit even though our analysis may show that that's the best choice. We would be happy as clams if the analysis comes up showing that a short lead time smaller unit would have the lowest life cycle cost. But if it doesn't, and I don't think we can count on that at all, it will be very important to have CWIP in the rate base to allow our decision to be unbiased and to permit us really to choose the lowest cost option.

So I would argue that having CWIP in the rate base is not as has been argued, a hindrance to a least cost strategy, but is essential to a least cost strategy, which we are trying to pursue at Vepco.

[The prepared statement of Mr. Munsey follows:]

TESTIMONY OF
EVERARD MUNSEY
EXECUTIVE DIRECTOR, PUBLIC POLICY
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

AUGUST 2, 1984

Mr. Chairman and members of the subcommittee.

I am Everard Munsey, Executive Director-Public Policy of Virginia Electric and Power Company. Vepco is the nation's twelfth largest investor-owned utility. Its service area includes most of Virginia, northeastern North Carolina and a small part of West Virginia. Approximately 11 percent of our sales, measured in kilowatt-hours, are at wholesale to cooperatives and municipalities.

I urge you not to disturb the Federal Energy Regulatory Commission's rule on construction work in progress (CWIP).

Retention of that rule is sound public policy in the light of the circumstances facing the electric utility industry now and in the coming years. We oppose S.817, S.1069 and H.R. 555, which would, in effect, allow a current return on construction work in progress only to utilities that were already close to death's door.

The FERC rule was adopted after exhaustive study and testimony and in the light of the insights the Commission has gained as part of its regulatory functions. The decision on CWIP is one that Congress should entrust to a regulatory body operating under sound and deliberate procedures. I would also suggest that Congress will find little enjoyment in the role of de facto utility regulator that it will acquire by legislating on this issue.

In this testimony I would like to make eight major points:

* The near-term impact of the FERC rule on most customers will be modest.

* But a current return on CWIP will be crucial in meeting the construction needs of the future.

* The challenge for the future is how to encourage needed capacity development in the face of strong disincentives for construction.

* CWIP in the rate base will facilitate, not hinder, the choice of the lowest cost options for meeting future demand growth.

* To build the generating capacity America will need, construction programs and utility financial health must be made compatible.

* While there are state regulatory precedents both for and against CWIP in the rate base, the FERC rule should be decided on its own merits.

* New orders, not cancellations, are the issue of the future.

* CWIP in the rate base is a practical necessity in the present circumstances of the industry.

Much of the debate over CWIP has failed to recognize the profound changes that have occurred in the industry.

The Near-Term Impact of the FERC Rule Will Be Modest

We are entering a period in which there will be relatively little construction of new generating capacity. Vepco has only one major construction project underway -- a six-unit pumped storage hydroelectric project located in western Virginia. When those units come into service next year, Vepco for the first time in 40 years, will have no new generating capacity under construction.

With the completion next year of our tenth project to convert an oil unit to coal, Vepco will have left only two units where conversion is economically feasible.

While the electric utility industry is increasingly diverse, Vepco's situation is typical of a large share of the industry. Many utilities have already completed their construction programs. Others are close to completion and no new orders are being placed for capacity of any kind. Within the next couple of years, about two-thirds of the investor-owned utilities are likely to have no major generating units under construction. The peak in construction expenditures has passed and total outlays for new units will fall rapidly over the next several years. Enough of the units that were planned and ordered in the past will be completed to provide sufficient generating capacity in most regions to allow a hiatus in construction. Under these circumstances very little construction will be underway and with little construction only a small amount will be paid on CWIP under the FERC rule.

For example, under the FERC rule, Vepco obtained an increase in its wholesale rates of slightly over 3 percent in its 1983 rate case. There will be no further increase attributable to CWIP in 1984. In 1985 the pumped storage units, which accounted for the bulk of the CWIP, will come into service. Thus the effect of the FERC rule, in the case of Vepco, will be that its wholesale customers will pay a modest amount toward our carrying costs only two years before they would have begun paying those costs, and more, when the units came into service.

After 1985, as I noted, no major generating unit will be under construction and therefore no CWIP will be paid for such a unit by our wholesale customers. We do plan two final projects to convert oil units to coal. Since 1976, 100 percent of CWIP on conversions has been permitted and I have heard no challenge to that provision. It's interesting and ironic that capital expenditures for coal conversions that reduce oil consumption are accepted as suitable for CWIP treatment at the same time that 50 percent CWIP is opposed on projects that will be needed to avoid increased consumption of oil and gas in the future.

As you know, there is a part of the industry that does not fit the picture I have described.

There are, as almost every day's news now reminds us, a number of companies with serious difficulties in completing their current construction. For them and their customers the near term impact of the treatment of CWIP is of far greater magnitude than for the rest of the industry.

Once these companies have completed their current projects, they too will be out of the construction business -- many of them probably for extended periods as they absorb the capacity the new units provide with growth in customer demand that will be depressed by high rate increases.

It is in the public interest that most of those troubled units be completed. The generating capacity that they would provide has already been counted in most assessments of the future adequacy of national and regional generating capabilities. If those units are not completed, the result will be to advance the date at which new generating capability is required. From a economic viewpoint, it will be better to complete the units underway whenever the incremental costs of doing so are less than the costs of the alternative generating capability plus the costs incurred in the cancellation or abandonment of the troubled units -- with all costs adjusted to reflect differences in their timing.

In these circumstances, Congress should not take any actions that will add to the already severe problems in completing those units. Rejection of the FERC rule on CWIP would be such an action. The circumstances of many of the owners of the troubled units illustrate vividly the need for current recovery of the carrying costs on large investments. Many of these companies have non-cash credits consisting of Allowances for Funds Used During Construction (AFC) that exceed net income. That means, of course, that they have no cash earnings whatever.

The FERC rule on CWIP will not be the most important factor in determining whether the troubled units are completed. But rejection of the rule would send the wrong signal at the wrong time. It would have both practical and symbolic effects that would make it more likely that the nation may end up wasting billions of dollars of potentially productive assets.

A Current Return On CWIP Will Be Crucial In Meeting Future Construction Needs

While most customers will pay only modest near-term costs as a result of the FERC rule, policies that permit current earnings on construction in progress will be crucial when new capacity must be built. The units that will serve America's electric needs through the rest of this decade were planned and ordered when demand was growing rapidly and predictably, when the financial condition of utilities was strong, when construction and financing costs were expected to be relatively low and when utilities had an economic incentive to add capacity. None of those conditions prevails today.

Investor-owned electric utilities now generally lack any incentive to build new generating capacity. Because few, if any, companies are earning the market cost of capital, they can count on losing money on every new investment they make. Because most utility stocks are selling below their book value, new construction will result in dilution of the investment of the present stockholders. Because of the high cost of construction, a new generating unit will increase electric rates, often by a substantial amount. And the rate increases will be larger if the carrying costs on construction financing are capitalized than if they are paid by customers as they are incurred. Increased rates result in irate customers and a more difficult regulatory climate.

Because of the unavoidable uncertainties about future demand growth, companies are reluctant to undertake major new investments. Many are already suffering penalties that resulted when their capacity development and demand growth got out of balance in the 1970s and early 80s. They have no stomach for renewing their exposure to that risk.

And finally, without a provision for current recovery of the carrying costs of the huge financing that is now required, a major construction project will be likely to severely damage a utility's financial condition. The cash flow available to pay interest and other fixed obligations will deteriorate. Credit ratings will be threatened with downgrading at the same time that external financing requirements will rise. The quality of earnings will decline. Non-cash credits, which represent an IOU for the carrying charges on the construction financing, will become an increasing share of earnings. This deterioration in the company's financial condition will result in increased capital costs that will make electric rates higher than they need to be.

In fact, the lack of investor confidence in utilities with large amounts of capitalized carrying costs has resulted in serious problems in attracting needed capital to electric utilities. Investors have plenty of other options and they have learned painfully that the electric utility industry is no longer the low risk arena that they once considered it.

The inclusion of CWIP in the rate base will make it possible to finance a construction program to meet future demand without devastating effects on the company's condition. It makes it possible for utilities to choose long-lead time, generating units with high capital costs when and if those units will provide the lowest life-cycle costs of electricity. It does not solve all the problems that utilities will face when construction is again needed or provide an incentive to build. But continuation of a policy providing for at least partial current recovery of the carrying costs on CWIP is an essential element in preparing to meet future needs.

Sooner or later most utilities will again need to add generating capacity to meet demand growth. How soon that need comes will depend on many factors: their initial capacity reserves; the economic and population growth of their service areas; their trading in capacity with other utilities; their ability to foster load management and conservation, and the availability of cogenerated power.

A hot debate is in progress on the likely national growth rate for electricity demand and the number of new generating units that will be required in the 1990s. The projections range from annual growth rates of 4 and 5 percent with electrification proceeding rapidly and electricity demand outpacing the growth of the total economy. At the other end of the range, there are projections of little or no growth in electricity demand. The lowest of these projections are predicated on the belief that there is a huge potential for cost-effective conservation and that all or much of that potential will be realized -- without any significant impetus from rising electricity prices.

For the purpose of making policy concerning CWIP, Congress need not resolve this issue. Even at very low growth rates the amount of capacity that would have to be added and the financing required to do it are impressive. For example, Vepco currently forecasts average annual growth in demand of 2.6 percent. That is, of course, far below the growth of 11 percent per year that we experienced before the Arab Embargo and below our actual growth in the post-Embargo 70s. In a system our size, that growth rate means an increase in load of around 300 megawatts each year in the 1990s. If that growth were met exclusively by construction of conventional generating units it would mean a new 750 megawatt coal unit about every two and half years at a cost per unit of about $1.3 billion, including carrying costs. If four such units were built they would provide an increase in our generating capacity of less than 30 percent at a cost equal to more than 80 percent of our current net investment in plant and equipment. At even, say, half the projected growth rate, the burden of financing the needed construction would still be so large that without a return on CWIP it probably could not be sustained. I will comment later on Vepco's approach to meeting future growth, but whatever approach is adopted will require substantial investment.

Currently attention is focused on the high cost of new nuclear units. But in fact all new capacity has a far higher cost than the units now reflected in utility rates. And while there is hope that non-conventional options will be economically attractive, it would be premature and unwise to make policy on the assumption that technology will somehow eliminate large future financing needs. CWIP will be needed to facilitate the required construction in the face of the other disincentives that would continue.

If, on the other hand, demand growth turns out to be relatively rapid, CWIP would be even more important to allow the required financing and to send timely price signals that the incremental cost of electricity is high. Without CWIP in the rate base, customers will see prices reflecting the high incremental cost of electricity only when the new generating capacity is in service and when, very probably, other units are already under construction. This is a formula for creating excess supply when customers cut back their demand in response to rate shock from the new units. It will lead to inefficient investment decisions not only by utilities but also by business and household users of electricity.

Customers are likely, for example, to choose less energy-efficient equipment than they would if they had better price information.

In contrast, with CWIP in the rate base, rates paid by customers increase gradually, reflecting to a degree the real costs of rising electricity use.

The claim by opponents of CWIP that demand growth will be so slight that little or no new construction will be needed proves too much for their own case. If there is little construction, there will also continue to be little impact of the FERC rule on wholesale customers and no need to seek its removal.

Congress will find it a fruitless exercise to attempt to forecast the geographical location, timing and extent of future capacity needs. Rather it should leave in place a policy that can make an important contribution to the industry's ability to meet those needs as they arise.

The Challenge For The Future Is To Provide The Basis For Meeting Capacity Needs

Critics of the FERC rule have asserted that the inclusion of CWIP in the rate base will induce utilities to build unneeded generating capacity. The rule itself provides an adequate safeguard against any such tendency by requiring an applicant for CWIP to demonstrate that the construction in question is prudent. But even if there were no prudency test, the utilities themselves have plenty of reason, apart from the treatment of CWIP, not to wish to embark on new construction. Utility executives spend a good part of their waking hours nowadays working to avoid or defer new construction.

In the light of this, why do utilities emphasize the need for a policy that will help make construction possible when it is needed? For several good reasons:

* Utilities have a legal obligation to provide reliable electric service to their customers. Their customers consequently expect -- indeed take for

granted -- that reliable service will be provided. Until the legal doctrine is changed, utilities are bound to take it seriously and to seek ways of reconciling it with the financial and economic realities they face. They understand that the failure to provide economical generating capacity when it is needed will have serious legal, regulatory and economic consequences.

* If economical baseload capacity is not added when it is needed, the result will be increased use of units with high operating costs and stop-gap measures to install units with short construction times regardless of their operating costs. Use of oil and gas will rise and electric costs and rates will be higher than they need to be. Customers will suffer and the utilities are likely to be blamed and penalized.

* Public policies that are tilted against the addition of economical capacity will exact subtle but real penalties through losses in economic growth and efficiency. Questions about the adequacy of future electricity supply will deter businesses from expanding their operations or shifting to more efficient processes using electricity.

For these reasons, the nation needs policies that will again provide appropriate incentives for utilities to build needed capacity. Only as policies in addition to a return on CWIP are put in place will the balance of incentives swing toward construction.

Policies concerning CWIP did not create the excess capacity present in the industry today and suggestions that permitting CWIP in the rate base will unlease a surge of overbuilding have no basis in reality. The concern with overbuilding is backward looking -- another instance of getting ready to fight the last war. The issue for the future will be creation of suitable incentives to build -- of which CWIP is but one.

II

CWIP In The Rate Base Will Allow Choice Of The Lowest Cost Options

Critics assert that allowing CWIP in the rate base will cause utilities to opt for large long lead-time generating units when there are less expensive means of responding to prospective demand growth.

Again, the FERC rule provides an appropriate safeguard against any such bias by requiring a utility applying for CWIP to demonstrate that it is pursuing a least cost strategy.

Again, even in the absence of such a requirement, utilities themselves have strong incentives to deal with anticipated demand growth at the lowest cost. In an increasing cost environment with regulated prices, utilities will be better off if they can keep their cost increases and rates increases as low as possible. If conservation or load management programs or innovative generating technologies are less expensive than a conventional generating unit -- counting all the costs on a comparable basis -- then the utility has every reason to prefer them.

Having CWIP in the rate base does not cure several of the problems with large long-lead-time units. Long-lead times increase a company's exposure to the risk that demand growth may be substantially different than forecast. Utilities have, and will continue to have, ample cause to be careful about betting the company on a particular demand forecast, and that is what may be involved with a large unit. Big units also increase a utility's exposure if something goes wrong in the development or operation of those units. And big units result in lumpy additions of capacity that will not neatly match the growth of demand on most systems. Some of these problems can be overcome by joint ventures, but those arrangements also have their problems.

Other things being equal, utilities will be better off with units with short lead-times and of smaller size -- units that can be completed in two to three years with 100 or 200 megawatts of generating capacity. But for such units to be the best choice for electricity customers, they must have lifecycle costs that are competitive with other options, including large units. If smaller, shorter lead-time units become the preferred choice, the amount of financing costs that would be paid before the unit's operation would be sharply reduced and the impact of the FERC rule on wholesale customers would continue to be modest.

On the other hand, if economies of scale make large generating units the best option -- even with due allowance for risk costs -- then it is in the interest of electricity customers that utilities should be able to make that choice. To do so, they will need to have CWIP in the rate base. And it's important to remember that in the electric utility business, unless short lead-time options become clearly available and preferable, decisions to add capacity must be made and costs incurred at least six to eight years before the capacity is needed.

The options that will have the lowest cost cannot be defined in the abstract or as some people try to do by simply attaching the "least cost" label to certain options that they prefer. The options that are really lowest in cost must be defined in terms of the particular circumstances of the utility system and the times when they will be needed.

Vepco's approach has been to undertake a wide ranging survey of the non-conventional options for serving or reducing projected demand growth. From among these options, 13 were selected for intensive study to determine their potential and costs on our system and to develop means of comparing their costs and reliability on a consistent basis. The options under study include four demand reducing options: intensified programs to foster conservation, load management, and cogeneration and end-use solar systems; four non-conventional fuels: municipal waste, peat, wood, and coal-water mixtures; four advanced technologies: wind turbines, solar photovoltaic cells, fuel cells, and combined cycle units with coal gasifiers, and low-head hydro. Vepco's goal and commitment is to compare these options with each other and with a conventional coal unit to determine the lowest cost combination of options. While the study is not yet complete, it is already clear that increases in conservation and load management will have an important role in our strategy. It is also clear that at our forecast growth rate, some additions to generating capacity will be needed in the 1990s. But without CWIP in the rate base, the financing burden would create a strong bias against the conventional option.

Those who believe in "least cost" approaches to meeting future electricity demand should support, not oppose, CWIP in the rate base.

Utility Financial Health And
Ability to Construct Must Be Made Compatible

The claim has been made that CWIP in the rate base is not needed because the electric utilities, apart from a few troubled companies, are healthy or at least getting healthy.

The overall health of the industry is indeed improving. That is the result of lower inflation, improved fuel prices, efficiencies and cost-cutting by the companies and the realization of some regulators that some improvement was necessary. But most of all, the improved health of the industry is a result of the winding down of construction programs.

The issue is not whether the industry can be healthy while it is building very little. Rather it is whether the industry can be healthy while it is building the generating capacity America will need. It is a commonplace in the industry that the surest way to move your stock from the brokers "buy" lists to the "sell" lists is to embark on a major construction program. At even very modest growth rates, many utilities will have to undertake investments before the year 2000, that at current and prospective costs, represent a very substantial share of their current total capitalization.

If public policy leaves utility financial health and utility construction as incompatibles, it will leave the industry with obligations it is unable to fulfill. It will create an unstable situation with untold potential for damage to our economy.

The FERC Rule Should Be Decided On Its Own Merit

Critics of the FERC rule have argued that it should be overturned because some states do not allow CWIP in the rate base.

It might equally be argued that the FERC rule should be affirmed because some states allow not just 50 percent but 100 percent of CWIP in the rate base. In Virginia, the State Corporation Commission has allowed CWIP in the rate base since September 1981. In North Carolina, the Public Utilities Commission is empowered to allow CWIP when it finds that doing so will be in the best interest of the customers. Under that rule, the PUC has permitted a return on Vepco's construction work in progress.

Our cooperative customers may soon prove to be interested in utilizing the Virginia rule permitting current recovery of carrying charges on CWIP. Last year, Vepco sold 11.6 percent of its North Anna nuclear power station to the Old Dominion Electric Cooperative (ODEC) representing 9 of our 11 Virginia cooperative customers. ODEC must pay cash for construction expenditures related to power station modifications and improvements as those expenditures are incurred. As coops increase their involvement in generation and transmission activities, they are likely to look more positively on getting a current return on CWIP.

The Virginia and North Carolina commissions have recognized the importance of current recovery of carrying charges to Vepco's ability to finance and to keep its capital costs at a reasonable level. The regulatory treatment of CWIP has contributed to the improvement in Vepco's financial condition and to a recent upgrading in Vepco's bonds and preferred stock that should lower its cost of capital. To the extent that a current return on CWIP is not included in our wholesale rates, our retail customers will be indirectly subsidizing our wholesale customers.

In the course of justifying its requests for CWIP, Vepco has demonstrated that with CWIP, customers will benefit from lower total costs over the life of a generating unit. Vepco calculated that with CWIP construction of its pumped storage units would require $962 million less in total revenues from our customers than with the carrying costs capitalized.

This difference is shown on the following table.

	No CWIP-AFC	CWIP In Rate Base	Difference
	(millions)		
Revenue During Construction	-0-	1,418	1,418
Return on Investment	3,994	2,988	(1,005)
Depreciation	1,376	1,028	(347)
Federal Income Tax After Investment Tax Credit	2,150	1,362	(788)
Property Taxes & Insurance	392	293	(99)
Gross Receipts Tax	503	362	(141)
Total Revenue Requirements	8,414	7,452	(962)

We have made a similar calculation for a conventional coal unit of the type that may be required to meet future demand growth. The total cost to customers of the future unit will be $376 million less if built with 100 percent CWIP in the rate base and $178 million less with 50 percent CWIP than if the carrying costs are capitalized.

Obviously there are precedents in state regulation both in support of and in opposition to CWIP in the rate base. I suggest the latter reflect a short-term perspective that results from the present adequacy of electricity supplies combined with concerns over rising electric rates.

In any event, the FERC decision should be judged in its own right without regard to state decisions. It is particularly appropriate for a federal regulatory body to take a longer term view related to concern over the future adequacy of the national electricity supply.

Cancellations Are Not The Issue Of The Future

The assertion that inclusion of CWIP in the rate base will make cancellations more likely is another backward-looking argument. The problem of the coming years will be how to get new orders for generating capacity -- not how to get rid of old orders.

The utilities that have had to cancel units have suffered. They typically have large investments that are earning no return while they are being written off over many years. Even when the nominal dollars invested will eventually be recovered through charges to ratepayers, the company's stockholders are incurring very large penalties when the amounts recovered are discounted to their present value. When a unit is cancelled, the utility's investment is at risk. Utilities' desire to never again experience a cancellation will remain intense.

Any decisions to cancel any of the 30 or so troubled nuclear units now under construction will be made by 1986 at the latest. With the provision in the FERC rule limiting rate increases to 6 percent per year, the FERC rule can have no significant effect in encouraging cancellations among those units.

Of the various developments that have caused cancellations, only the inability to finance is materially and directly affected by the treatment of construction work in progress. The FERC rule will make it less likely that a unit would have to be cancelled for strictly financial reasons. The inclusion of CWIP in the rate base will therefore make it somewhat less likely that cancellations will be necessary.

CWIP Is A Practical Necessity In The Present Circumstances Of The Industry

The regulatory treatment of construction work in progress should be determined in the light of the practical effects it will have on the electric utility industry's ability to perform its economic function.

Arguably, the capitalization of carrying costs on construction work in progress made sense in the conditions that prevailed prior to the early 1970s. Now, however, conditions have changed and a current return on construction work in progress is needed to address the new realities of today and of the years ahead.

Prudent policy cannot be made on the hope and assumption of a technological fix or a surge in conservation. Anyway if either should occur, the issue of CWIP is self-resolving.

It may be that the present realities call for more basic reforms in the structure of the industry. At Vepco, we have argued that they do. But until and unless such fundamental changes are made, the FERC rule on CWIP is a correct and necessary step.

Senator CHAFEE. OK; fine. Thank you very much, Mr. Munsey. Mr. Baeten.

STATEMENT OF RALPH G. BAETEN, CORPORATE ACCOUNTING DIRECTOR, WISCONSIN PUBLIC SERVICE CORP.

Mr. BAETEN. Thank you, Senator. My name is Ralph Baeten. I am corporate accounting director for Wisconsin Public Service Corp. My submitted testimony is a tangible demonstration that including CWIP in the rate base would provide significant benefits to consumers and utilities alike.

I appreciate the opportunity to summarize a few key aspects of that testimony. There is no dispute over two facts that are crucial to any analysis of CWIP in rate base. First, the cost of utility plant is ultimately borne by the consumer; and, second, the cost of the utility plant is less with CWIP in rate base than excluding it because of the elimination of additional financing charges. Those additional finance charges accumulate at massive rates causing the consumer to eventually pay large amounts for return, depreciation, tax, and other fixed charges which otherwise would be avoided and are significantly higher in my opinion than any calculated savings when discounting revenue requirements.

It is equally clear that including CWIP in rate base strengthens the utility, giving it wider access to capital markets and reducing its cost of obtaining financing. The exclusion of CWIP from rate base has the opposite affect. It depletes the utilities' financial resources, discourages investors from buying securities, and increases its capital costs. The lower capital costs from including CWIP in rate base is a benefit which is immediately passed on to the customer, and is one of the factors causing CWIP rates to be lower than non-CWIP rates.

The opponents of CWIP rates contend that the utility industry is in good financial condition. Based on the expert testimony at the first Senate hearing by Mr. Bennar and Mr. Hunnokee, that point is not true as a general matter. The Wisconsin Commission's partial allowance of CWIP in rate base is one of the causes of the financial turnaround in Wisconsin. This good financial condition that we experience in Wisconsin produces rate stability without burdening our investors with additional risks and our customers with additional costs. Wisconsin retail rates are below industry average. Furthermore, Wisconsin is among the leading States in the pursuit of least cost energy strategies. The State's CWIP policy and its least cost energy strategy compliment each other and in tandem provide a strong basis for ensuring an adequately and reasonably priced electric energy supply.

Finally, the used and useful concept has been discussed by some witnesses appearing before this committee. Times have changed since that concept was formulated. Prior to the 1970's, the construction costs were lower than plant costs, so as a new plant came on line the cost per unit of generation was going down. The opposite is true since the mid-1970's. Second, construction periods prior to 1970 were much shorter, and the cost of financing wasn't significant as compared to what we are experiencing today.

As a consequence, in those days the exclusion of CWIP from rate base had very little impact. In fact, the productivity improvements tended to reduce rates rather than increase them when a new plant came into service. Drastically changed conditions affecting the electric utility industry require a shift from the used and useful concept of providing service. I believe their requirements of providing proper price signals, lessening effects of rate shock, maintaining equity for all of our rate payers, and providing for an adequate energy supply fall under the umbrella of providing service.

The CWIP order No. 298 allows utilities to meet their obligation of providing that service. I urge you to set aside the proposed legislation that would override order No. 298. Thank you.

[The prepared statement of Mr. Baeten follows:]

TESTIMONY OF
WISCONSIN ELECTRIC POWER COMPANY, WISCONSIN POWER & LIGHT COMPANY, WISCONSIN PUBLIC SERVICE CORPORATION

On H.R. 555, S. 817, and S. 1069

LEGISLATION RESTRICTING THE INCLUSION IN RATE BASE OF CONSTRUCTION WORK IN PROGRESS (CWIP) IN WHOLESALE ELECTRIC POWER RATES REGULATED BY THE FEDERAL ENERGY REGULATORY COMMISSION

RALPH G. BAETEN
Corporate Accounting Director
Wisconsin Public Service Corporation

BEFORE THE

SENATE SUBCOMMITTEE ON ENERGY REGULATION

AUGUST 2, 1984

Mr. Chairman and members of the Subcommittee:

Introduction: I am Ralph G. Baeten, a resident of the State of Wisconsin and the Corporate Accounting Director of Wisconsin Public Service Corporation ("Public Service"). I appear today on behalf of that company and two other Wisconsin utilities, Wisconsin Electric Power Company ("Wisconsin Electric") and Wisconsin Power & Light Company ("Power & Light"). My testimony concerns the pending construction work in progress or CWIP legislation, H.R. 555, S. 817 and S. 1069, which would reverse the present policy of the Federal Energy Regulatory Commission allowing utilities to include up to 50% of CWIP in wholesale electric rates. S. 817 would exclude CWIP from rate base in virtually all circumstances. H.R. 555 and S. 1069 treat CWIP relief as an emergency measure available only in cases of severe financial difficulty. The three Companies respectfully oppose the CWIP bills as damaging to them and to the customers who depend on them for electric service.

I begin with a description of the service responsibilities of the three Companies. My own company, Public Service, provides electricity to retail customers in an approximately 10,000 square mile area in northeastern Wisconsin and an adjacent part of upper Michigan. That service area includes a population of about 800,000 with over a quarter million homes and nearly 30,000 commercial and industrial enterprises. The major part of the Company's electric business, about 83%, is regulated by the State of Wisconsin. About 2% is regulated by Michigan. Public Service also sells electricity at wholesale to eleven municipal utilities, two cooperatives, and one private company. The latter sales, representing about 15% of the Company's electric business, are regulated by the Federal Energy Regulatory Commission or FERC and would be subject to the proposed legislation.

Wisconsin Electric's service area includes over 2 million people, 700,000 homes and 71,000 businesses. Power & Light's service area includes a total population of 898,000, with 275,000 homes and 36,000 businesses. FERC regulates about 6% of Wisconsin Electric's firm sales and about 21% of Power & Light's firm sales. Together, the three Companies account for over 80% of the retail electric sales in Wisconsin and about 85% of Wisconsin utilities' firm sales subject to the jurisdiction of the FERC.

Position of the Companies: The Companies testify from the vantage point of being in good financial condition and operating under a retail commission whose policy has been to permit partial inclusion of CWIP in rate base. They oppose S. 817 since it would prohibit the opportunity for CWIP relief. They oppose H.R. 555 and S. 1069 since those bills single out CWIP costs from other utility costs and would prohibit the current recovery of CWIP costs except as an extraordinary measure to maintain a utility at a subsistence level of viability. Such a policy, which may force a utility providing a vital public service into serious financial difficulty for the sake of a short-term lower rate level is not in keeping with the public interest. It victimizes investors whose capital is dedicated to a public service enterprise and customers who look to the utility to provide an adequate energy supply at reasonable prices over the long term.

A desirable regulatory policy is one which serves the interests of investors and customers alike by maintaining the financial health of the utility and keeping rates reasonable. To help accomplish those objectives, CWIP should be included in rate base as a standard ratemaking practice for financially sound utilities as well as for those experiencing financial difficulties. In other words, CWIP belongs in rate base to preserve a utility's financial viability and not merely to rescue the utility once financial disarray has begun to settle in. CWIP also belongs in rate base because in the long-run that policy is certainly no more expensive, and is likely to be significantly less expensive, to ratepayers than a policy that would allow CWIP in rate base only in rare instances or not at all.

The State of Wisconsin has permitted a substantial amount of CWIP in rate base as a standard ratemaking policy for many years. */ The results of this policy of allowing a cash return on a portion of a utility's CWIP have been very beneficial. Wisconsin utilities are among the financially healthiest utilities in the country. The customer side of the coin is that rates charged in the State of Wisconsin are below average when compared with those of utilities in other states. And, even though Wisconsin utilities are permitted to include CWIP in rate base, Wisconsin utilities stand among the national leaders in their pursuit of load management and conservation techniques to arrest the growth of peak firm demand and thus reduce the requirement for constructing new facilities.

The Wisconsin experience demonstrates the benefits of a policy of regularly allowing a cash return on at least a portion of a utility's outstanding CWIP balance. The rest of my testimony largely focuses on that

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*/ The Wisconsin CWIP rate allowance is in the form of an upward adjustment to the allowed return on in-service assets. The adjustment provides a full cash return on a portion of CWIP which the Wisconsin Commission determines on a case-by-case basis. For the balance of its CWIP, the utility has been permitted to accrue the allowance for funds used during construction or AFUDC at a 7% rate and to earn a cash return on the difference between 7% and its actual cost of capital.

experience as a way of showing that CWIP should be allowed in rate base and that the presently pending CWIP legislation will not accomplish its intended consumer protection objectives.

Why CWIP has become an important ratemaking issue: Through the 1960s, CWIP could be excluded from rate base without causing financial hardship because the construction period for base load generators was relatively brief, capital costs were low, and technological gains more than offset any inflation so that per-unit investment costs were declining rather than increasing. For example, in the 1950s, Public Service placed two coal-fired generating units in operation with an average cost per KW of $199. By comparison, the cost of a 1969 Public Service coal-fired unit was only $139 per KW.

The embedded cost per KW in utility plant in service and being recovered through rates was higher than the per KW cost for new construction. Thus, there was a reasonable relationship between the utility's revenue level from electric sales and its construction program cost. The declining per-unit investment cost was accompanied by expanding sales which safeguarded the utility from an attrition in realized rate of return during the construction period and, after completion of a major construction project, could obviate the need for a rate increase or even justify a rate reduction. In that kind of environment, utilities did not feel the ill effects of excluding CWIP balances from rate base, they remained healthy despite extensive construction programs, and there were no "rate shocks" as new facilities were brought on line to serve customer needs.

The experience of the 1960s is not replicated by the economic conditions of the 1970s and 1980s. Major differences between the two periods are the huge increase in the size of utility construction programs and the increased time required to construct new generating units. This means that much larger amounts of money are tied up in construction programs for much longer periods. It should be realized that in these circumstances of prolonged construction periods and large capital outlays, the proposed legislative exclusion of CWIP from rate base will create a tremendous time lag in receiving the necessary cash flow to support construction projects.

The changed conditions of the post-1970 period ended the steady decline in per unit investment costs that persisted during and prior to the 1960s. Nowadays new plant investment costs exceed the average investment cost of plant in service by such a large margin that there is a wide gap between revenues which are based on plant in service and the funds required to support a continuing construction program. That disparity is the key factor causing both the financial distress which is experienced by utilities during the period of construction and the rate shock which is experienced by customers after construction is completed and a new facility enters rate base.

Public Service's own experience illustrates the magnitude of the unit cost turnaround. The 1969 unit which entered service with an investment cost of $139 per KW was followed by two coal-fired units placed in service by Public Service in the late 1970s with an average cost of $303 per KW, an increase of over 50%. Public Service's last unit, also coal-fired, was placed in service in 1981 at a per KW cost of $715. These increases, from $139 per KW in the 1960s, to $303 per KW in the 1970s, to $715 per KW recently, pale in significance next to the increases just over the horizon. The FERC estimates that the investment cost per KW of a coal-fired power plant placed in service in the latter 1980s is apt to be as high as $2,000 per KW. [*] Further increasing the burden on utilities is that the large investments in new plant construction are accompanied by large investments which may have to be made to existing plants to keep them in operation. In the case of Public Service, acid rain related investments alone may require a $260 million expenditure, no portion of which will increase productive capacity.

In short, the situation of the last several years is the opposite of the 1960s. Then, productivity improvements neutralized the adverse effect of excluding CWIP from rate base. Today, the productivity improvement has disappeared as the costs of electric utility construction programs have increased enormously.

The policy of excluding CWIP from rate base is an outgrowth of economic conditions which prevailed in the past. Those conditions have changed and the policy of excluding CWIP from rate base must likewise give way to change. The perpetuation of that exclusion as recommended in the proposed legislation would convert a past, temporary condition into a statutory rule that is out of touch with present-day economic reality and that would preclude the charging of reasonable rates to the detriment of the electric industry and thus to the customers which it serves.

Rate Impact: The inclusion of CWIP in rate base does not result in higher rates. When CWIP is not included in rate base, the cost of financing CWIP compounds and accumulates throughout the period of construction, and is treated as part of the cost of plant when the plant goes in service and enters rate base. In addition, the higher risk by deferring the carrying cost recovery demands a higher return to investors thus again increasing costs. The cash flow to support the construction comes too late, while the plant is in service rather than during construction. The financing cost, which can amount to as much as 40% or more of total plant cost, is then paid by ratepayers over the life of a facility, perhaps 30 years or more. By contrast, when a portion of CWIP is included in rate base, as it has been in Wisconsin, the majority of the carrying costs of CWIP financing is eliminated from rate base and from the rates charged to customers for electric service over the life of the asset. Also, lower risk because of current recovery allows for lower cost financing alternatives.

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[*] Kentucky Utilities Company, Opinion No. 15-B, 20 F.E.R.C. ¶61,173 at 61,348 (1982).

Power & Light has provided a calculation of the CWIP impact for its Edgewater Unit #5 coal plant that is currently under construction. The comparison, which is shown in Attachment 1, assumes partial CWIP in rate base as would be permitted under the present FERC rule and no CWIP at all in rate base pursuant to H.R. 555. The computations show a $184 million savings under the FERC rule. This example does not include the potential for higher cost capital because of the added risk of recovering the construction carrying costs.

Public Service's most recent generating plant, Weston 3, presents another example of the cost effect of the Wisconsin policy of allowing a substantial amount of CWIP in rate base. An additional $23 million would have been added to the investment in that plant if no CWIP were allowed in rate base. The book value for that unit is $215 million which already includes $17 million of allowance for funds used during construction. If the plant had been fully in rate base from the first day of construction, the total plant cost would have been less than $200 million and the customer savings $40 million.

With CWIP included in rate base, Wisconsin utilities' rates compare favorably with those of utilities in other states. Edison Electric Institute data for 1983 shows that the retail rates of Public Service, Wisconsin Electric and Power & Light are below the national average based on a study of some 225 electric utilities. This is particularly significant since Wisconsin has no significant in-state energy resources, and incurs expensive transportation charges for its coal, the prime generation source.

The inclusion of CWIP in rate base also softens the "rate shock" that occurs when a new generating plant enters service. Because much of Weston 3 was included in the retail rate base during construction, the retail rate increase that was filed when Weston 3 entered service was 10%. By contrast, the wholesale increase was 30%, an abrupt and significant rate level change for which many business and family budgets were not prepared.

In Attachment 3, Power & Light determined the rate shock that its new Edgewater unit would cause under the FERC rule with half of CWIP in rate base and with no CWIP at all in rate base. If no CWIP were included in rate base, the Edgewater Unit would require a 23.8% increase entering service. Under the current FERC rule, the rate increase would be only 6.2%.

In summary, the consumer is better off under a regulatory regime in which CWIP is included in rate base. It is true that when CWIP is included in rate base, revenue requirements are higher while the plant is under construction. But over the long run, the inclusion of CWIP in rate base reduces ratepayer costs as the savings from CWIP in rate base accumulate and compound and as those savings are reflected in the utility's rates.

Conservation And Load Management Efforts: It is contended by some that the inclusion of CWIP in rate base would cause utilities to ignore conservation and least cost energy strategies. That has not been the case in Wisconsin where the inclusion of CWIP in rate base has not dulled the incentive to search for ways of controlling load and reducing the need for additional plant.

Public Service has instituted time-of-use rates which apply to about 56% of the Company's firm power sales and which are intended to shift electric demand from peak to the off-peak periods in order to reduce the growth in peak demand and the need for constructing new facilities. Public Service also provides interruptible service, which does not require reserve generating capacity, for those customers who can tolerate a lower level of service reliability than the average electric consumer. Both the time-of-use rates and the interruptible rates introduce an element of flexibility in our rate schedules giving customers a choice as to when and how they will use their electric service and as to the price they will accordingly pay for that service.

Public Service has a water heating control program for residential customers, an Energy Check-Up program under which the Company examined thousands of homes and businesses last year, and a Good Cents program under which homebuilders and residential customers are given advice about the design and construction of energy-efficient homes. Finally, based on the success of a pilot project in two counties, the Company began offering home weatherization subsidies to qualified low-income customers in 16 other Wisconsin counties.

These programs have had a major success. The Company's load factor, that is the percentage of time its facilities are used during the year, is among the highest, if not the highest in the country. For 1983, the load factor was 73% while the industry factor was 60%. At the same time, the Company has trimmed the growth in peak load demand, and delayed the date for adding its next new generating facility until the 1990s.

Public Service's efforts in this area have been paralleled by those of Wisconsin Electric and Power & Light, each of which has an extensive array of programs to arrest growth in peak loads and control the need for new facility construction. Indeed, although CWIP has been included in Wisconsin utilities' retail rate base, Wisconsin utilities stand among the leaders in the country in their aggressive efforts to meet that customers' energy requirements through load management and conservation rather than through a heavy building program.

The inclusion of CWIP in rate base operates hand-in-hand with the Companies' conservation and load management efforts to restrict growth in peak demand. When rates include a CWIP allowance, the customer is given a price signal that electric consumption entails a cost in terms of the additional construction that is required when demands outstrip existing capacity. That price signal supplements the rate incentives which are intended to reduce peak period consumption. If CWIP is excluded from rate base, rates work at cross purposes with conservation initiatives since the absence of a CWIP allowance will induce usage at the same time that conservation initiatives are working to reduce it.

Financial Condition: In terms of the various benchmarks of financial performance, the financial condition of Wisconsin utilities ranks among the best in comparison to other utilities in the country. It is true that the three Companies are experiencing high capital costs, but that is true of all business enterprises today and will be true as long as investors remain concerned over the magnitude of the federal deficit, the related problem of high interest rates and the possibility of a renewal of inflation. However, the three Companies' bond ratings are excellent. Their coverage of fixed charges is sound. The market price of their common stock is very close to the book value of the facilities in which the common stock is invested.

I do not hesitate to emphasize the importance of the benefits which accrue to investors from the good financial condition of the Companies. By and large, investors in electric utility securities, and particularly electric utility common equity, are not speculators out for a quick financial killing. They are typically long-term investors whose objective is secure income and reasonable capital appreciation over time. These investors have committed their capital to a public interest endeavor, the provision of electric service, and their legitimate interests in the preservation of the integrity of their investments needs to be recognized. Legislative or regulatory policy which ignores legitimate investor interests is inequitable. Just as surely, such a policy would cause grave economic harm with serious impacts on the industry, its customers and the economy as a whole.

Not surprisingly, the interest of the electric utility investor and the electric utility customer are very closely aligned since the sound financial condition which protects the integrity of an investment also results in lower capital costs which translate into lower rates. An example based on Public Service experience in the 1970s involves long-term debt. In 1971, the Company sold $45 million in bonds at 9⅛% with the result that its embedded cost of debt rose by 150 basis points. In 1977, Public Service was able to replace those 9¼% bonds with new bonds issued at the cost of 8.2%. The Company was one of the first utilities in the nation to substitute a lower cost issue for a higher cost issue when interest rates dipped in the latter part of 1976. Merrill Lynch, the underwriters for the refunding issue, indicated that the refunding would not have been possible without the good bond ratings our company enjoys.

A more recent example of ratepayer benefit stemming from Public Service's good financial condition arises in connection with the Company's April 1981 sale of $15 million of 10-year preferred stock. The 10.75% dividend rate was about 150 to 175 basis points less than the market at that time. That sale results in lower billings to our customers of about $5 million over the life of that series subject to Public Service's ability to maintain adequate earnings quality so that preferred dividends do not constitute a return of capital. The bargain inures to the benefit of our customers if the necessary quality of earnings can be maintained.

Public Service's financial standing is matched by that of Wisconsin Electric and Power & Light. For each of the three Companies, the relative acceptability of its securities has produced financial benefits that are directly reflected in the rates charged to our customers.

One of the reasons that the Wisconsin policy has been successful in protecting the financial integrity of Wisconsin utilities is the consistent application of the policy of allowing CWIP in rate base. Investors could count on rate base recognition of CWIP in accordance with Wisconsin practice, and as a consequence confidence in the quality of the Companies' securities has been relatively high. The same expectations and benefits would apply under the present FERC policy. On the other hand, those benefits would not accrue under H.R. 555 or S. 1069 since the likelihood of receipt of CWIP relief would be problematic at best. Indeed, the uncertainty over CWIP relief for a utility embarking on a major construction project would almost guarantee the very financial deterioration which H.R. 555 and S. 1069 are supposed to remedy.

Another benefit is that the Companies are positioned to provide the electric energy needed for the prosperity of their service areas. This will entail large capital expenditures even though construction budgets have been pared. For example, over the next ten years, Public Service will spend an estimated $600 million on electric construction. That is a large amount when it is considered that Public Service's total capital presently dedicated to electric service is only $600 million and that the construction estimate is exclusive of (1) any expenditures for the Company's next generating plant which is scheduled for the 1990s or (2) any scrubber related retrofits which may be needed for Public Service's existing coal-fired generating plants and potential acid rain modifications which, as I have already testified, could cause Public Service to spend an additional $260 million. Moreover, Public Service's construction estimate could prove to be low if the resurgence in the economy causes demand to increase faster than the Company's ability to control it.

The State of Wisconsin has all the ingredients of a vibrant economy, an industrious workforce, an abundance of water and a good transportation infrastructure. However, without an adequate supply of electric energy there will be no industrial or business expansion. Maintaining the financial integrity of the utilities in the state plays an important part in preventing energy shortages that would dampen the state's economic prosperity.

Conclusion Regarding The Wisconsin Experience: The experience of our Companies under Wisconsin CWIP regulation demonstrates that the inclusion of CWIP in rate base is in the best interest of the consumer. In Wisconsin, CWIP relief has been available as a standard policy and has been part of a blend of various policies which have kept customer rates at a reasonable level, caused the implementation of conservation practices and protected the interests of investors. The Wisconsin experience establishes that a statutory prohibition against the inclusion of CWIP in rate base would do a significant disservice to the public interest.

Conclusion:

The FERC CWIP policy would permit realization at the Federal level of the benefits the Wisconsin CWIP policy has produced for Wisconsin utilities and consumers alike. That policy will not increase utility earnings or profits by one cent. It will not over the long term result in extra cost to consumers, and in fact should reduce consumer cost by a significant margin. The proposal will also afford utilities significant relief, eliminate disincentives against construction of needed energy production facilities, soften the rate increases which are needed when significant new plant enters service, and convey appropriate price signals as to the true cost of electric energy production. Moreover, the relief the FERC CWIP policy would provide would be available when it would do the most good: as a preventive against serious financial distress rather than as an attempted cure once financial distress has taken root and the utility finds itself caught in a downward spiral in which its financial problems feed upon each other to create an ever worsening situation. The maxim that an ounce of prevention is worth a pound of cure is appropriate here.

It is important to note that although the FERC has adopted inclusion of a portion of CWIP in rate base as a standard ratemaking tool, it has not given utilities a "carte blanche" to claim CWIP regardless of the circumstances. As a condition of obtaining CWIP relief, a utility must demonstrate to the Commission that it is pursuing a least cost energy strategy. A customer can challenge CWIP on imprudence grounds just as any other cost of service item may be challenged on that ground. Indeed as a result of its CWIP policy, FERC's review of the prudence of a project will occur at an early stage rather than after a project has entered service or been abandoned. The prudency review at the time of project abandonment is a regulatory and industry nightmare. It has been costly for the customers, the taxpayer and the utilities. The Commission has also explicitly retained authority to consider whether CWIP relief should be denied on competitive grounds or because a customer plans not to take power from the plant under construction. Indeed, the Commission has the flexibility to discard its present CWIP policy and formulate a new one if changing conditions warrant a new or modified policy.

The legislation pending before this Committee has varying provisions that would erect procedural and substantive obstacles to obtaining CWIP relief and could be interpreted as denying CWIP relief on a subject to refund basis. The message of the legislation is loud and clear: no CWIP relief except in the most exceptional circumstances and perhaps no CWIP relief even in those circumstances. There will be one of two effects. Either a utility will refuse to build needed new facilities in an effort to protect itself. Or alternatively, it will press ahead with needed new construction to protect the general public despite the injury to itself and at higher consumer costs. Neither situation serves the public interest.

Attachment 1

WISCONSIN POWER AND LIGHT COMPANY

Comparison of Consumer Costs
Current FERC Rule vs. HR555
For Construction of Edgewater 5 Generating Unit

$(000)

	Costs to WP&L Electric Consumers		
Time Period	Current FERC Rule	HR555 Procedure	Difference
Construction (Years 1-10)	$ 70,119	$ (23,295)	$ 93,414
Useful Life (Years 11-40)	1,150,018	1,428,284	$(278,266)
TOTAL	$1,220,137	$1,404,989	$(184,852)

As shown above, the procedure under HR555 would increase the costs to WP&L electric customers by nearly $185 million (15%) as compared to the current FERC procedure.

05/08/84
CASE 1: NO CURRENT CWIP EARNINGS
HR555

WISCONSIN POWER & LIGHT CO.
CWIP VERSUS AFUDC
$(000)
Edgewater 5 Unit Under Construction

Attachment 2
Page 1 of 2

10% Discount Rate

	CONSTR EXPEND	AFUDC BOOKED	AVG RATE BASE	DEPREC EXPENS	RETURN	INTEREST	INCOME TAX	AD VALOREM	REVENUE REQUIRE	PRESENT VALUE
YEAR 1	368.0	26.0	0.0	0.0	0.0	0.0	(12.4)	0.0	(12.4)	(11.3)
YEAR 2	1081.0	131.1	0.0	0.0	0.0	0.0	(61.4)	9.1	(52.3)	(43.2)
YEAR 3	1733.0	343.8	0.0	0.0	0.0	0.0	(156.3)	36.9	(119.4)	(89.7)
YEAR 4	2520.0	681.1	0.0	0.0	0.0	0.0	(299.8)	84.7	(215.1)	(146.9)
YEAR 5	8936.0	1563.1	0.0	0.0	0.0	0.0	(686.4)	158.3	(528.1)	(327.9)
YEAR 6	26083.0	4203.4	0.0	0.0	0.0	0.0	(1868.4)	399.8	(1468.6)	(829.0)
YEAR 7	39873.0	9311.8	0.0	0.0	0.0	0.0	(4094.4)	1096.4	(2998.0)	(1538.4)
YEAR 8	40500.0	15987.1	0.0	0.0	0.0	0.0	(6806.9)	2227.6	(4579.3)	(2136.3)
YEAR 9	38585.0	23289.1	0.0	0.0	0.0	0.0	(9476.0)	3526.8	(5949.2)	(2523.1)
YEAR 10	45740.0	31746.1	0.0	0.0	0.0	0.0	(12322.1)	4950.0	(7372.1)	(2842.3)
YEAR 11		0.0	287823.1	9756.7	40655.0	19428.1	24136.4	6732.1	81280.1	28488.4
YEAR 12		0.0	278066.3	9756.7	39276.9	18769.5	23416.8	6507.7	78958.1	25158.6
YEAR 13		0.0	268309.6	9756.7	37898.7	18110.9	22697.2	6283.3	76635.9	22198.9
YEAR 14		0.0	258552.8	9756.7	36520.6	17452.3	21977.7	6058.9	74313.9	19569.3
YEAR 15		0.0	248796.1	9756.7	35142.4	16793.7	21258.1	5834.5	71991.8	17234.4
YEAR 16		0.0	239839.3	9756.7	33764.3	16135.1	20538.6	5610.1	69669.6	15162.3
YEAR 17		0.0	229282.6	9756.7	32386.1	15476.6	19819.0	5385.7	67347.6	13324.5
YEAR 18		0.0	219525.8	9756.7	31008.0	14818.0	19099.4	5161.3	65025.5	11695.5
YEAR 19		0.0	209769.1	9756.7	29629.9	14159.4	18379.9	4936.9	62703.4	10252.6
YEAR 20		0.0	200012.3	9756.7	28251.7	13500.8	17660.3	4712.5	60381.2	8975.4
YEAR 21		0.0	190255.6	9756.7	26873.6	12842.2	16940.8	4488.1	58059.1	7845.6
YEAR 22		0.0	180498.8	9756.7	25495.4	12183.7	16221.2	4263.7	55737.0	6847.1
YEAR 23		0.0	170742.1	9756.7	24117.3	11525.1	15501.6	4039.3	53414.9	5965.3
YEAR 24		0.0	160985.3	9756.7	22739.2	10866.5	14782.1	3814.9	51092.8	5187.3
YEAR 25		0.0	151228.6	9756.7	21361.0	10207.9	14062.5	3590.5	48770.7	4501.4
YEAR 26		0.0	141471.8	9756.7	19982.9	9549.3	13343.0	3366.1	46448.6	3897.3
YEAR 27		0.0	131715.1	9756.7	18604.7	8890.8	12623.4	3141.6	44126.5	3365.9
YEAR 28		0.0	121958.3	9756.7	17226.6	8232.2	11903.8	2917.2	41804.4	2898.9
YEAR 29		0.0	112201.6	9756.7	15848.5	7573.6	11184.3	2692.8	39482.3	2489.0
YEAR 30		0.0	102444.8	9756.7	14470.3	6915.0	10464.7	2468.4	37160.2	2129.6
YEAR 31		0.0	92688.1	9756.7	13092.2	6256.4	9745.2	2244.0	34838.1	1815.0
YEAR 32		0.0	82931.3	9756.7	11714.0	5597.9	9025.6	2019.6	32516.0	1540.1
YEAR 33		0.0	73174.6	9756.7	10335.9	4939.3	8306.0	1795.2	30193.9	1300.1
YEAR 34		0.0	63417.8	9756.7	8957.8	4280.7	7586.5	1570.8	27871.8	1091.0
YEAR 35		0.0	53661.1	9756.7	7579.6	3622.1	6866.9	1346.4	25549.7	909.2
YEAR 36		0.0	43904.4	9756.7	6201.5	2963.5	6147.4	1122.0	23227.6	751.4
YEAR 37		0.0	34147.7	9756.7	4823.4	2305.0	5427.8	897.6	20905.5	614.8
YEAR 38		0.0	24391.0	9756.7	3445.2	1646.4	4708.3	673.2	18583.4	495.8
YEAR 39		0.0	14634.3	9756.7	2067.1	987.8	3988.7	448.8	16261.3	395.2
YEAR 40		0.0	4877.5	9756.7	689.0	329.2	3269.1	224.4	13939.2	308.0
TOTALS	205419.0	87282.6			620157.9	296358.2	375297.4	116836.7	1404989.0	215920.1

AFDC BOOKED AT	0.1412
DISCOUNT RATE	0.1000
CST OF DBT AT	0.1350
CST OF EQTY AT	0.1475
COST OF CAPIT	0.1412

STRAIGHT LINE DEPRECIATION (BOOK & TAX)
AFUDC IS COMPOUNDED AT 0.1075

05/08/84
CASE 2: CURRENT EARNINGS ON 50% OF CWIP
Current FERC RuLe

WISCONSIN POWER & LIGHT CO.
CWIP VERSUS AFUDC
$(000)
Edgewater 5 Unit Under Construction

Attachment 2
Page 2 of 2

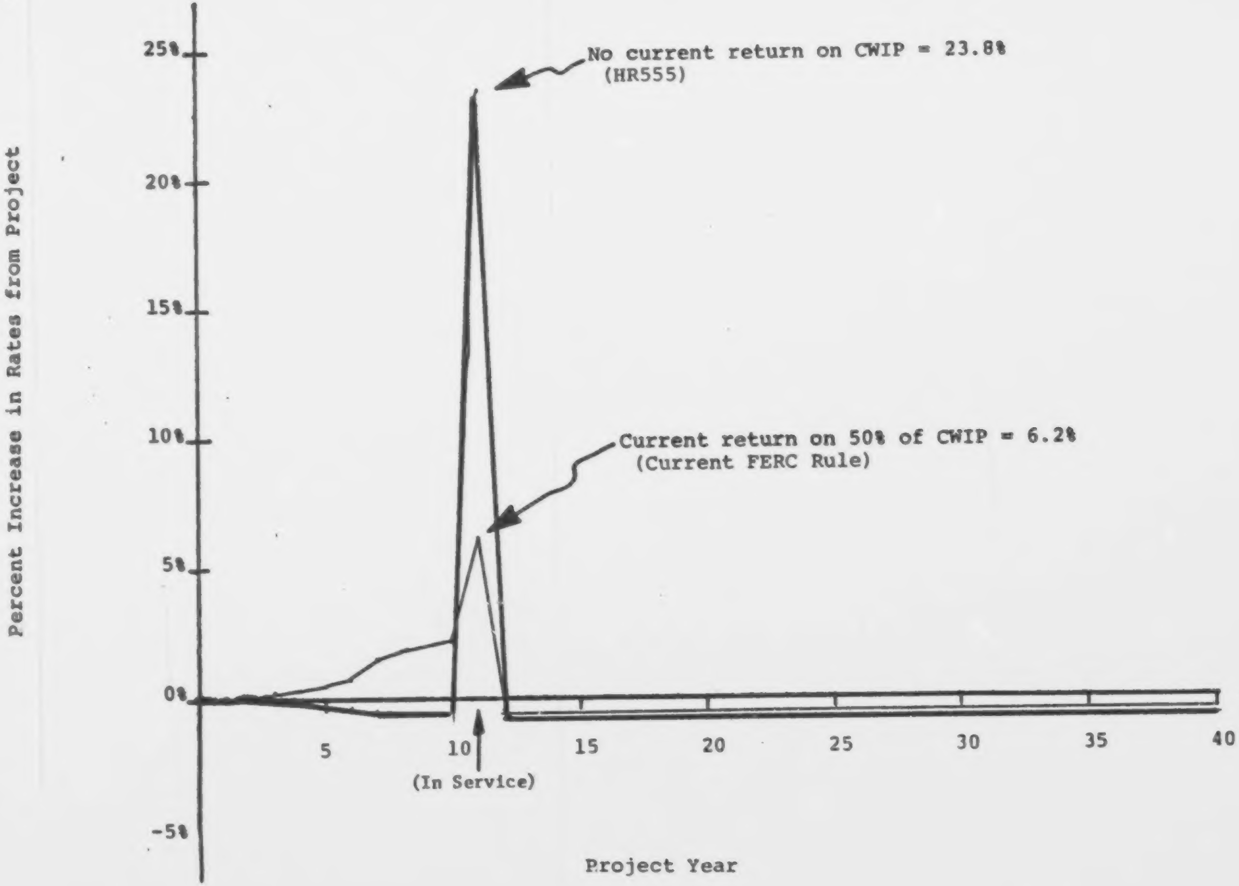
10% Discount Rate

	CONSTR EXPEND	AFUDC BOOKED	AVG RATE BASE	DEPREC EXPENS	RETURN	INTEREST	INCOME TAX	AD VALOREM	REVENUE REQUIRE	PRESENT VALUE
YEAR 1	368.0	13.0	98.5	0.0	13.9	12.4	1.5	0.0	15.4	14.0
YEAR 2	1081.0	64.1	499.3	0.0	70.5	61.3	9.2	8.8	88.5	73.1
YEAR 3	1733.0	163.5	1316.6	0.0	186.0	156.3	29.7	35.1	250.7	188.4
YEAR 4	2528.0	313.6	2618.4	0.0	369.8	299.8	70.0	78.7	518.6	354.2
YEAR 5	8936.0	718.0	5998.2	0.0	847.2	686.5	160.8	143.9	1151.9	715.2
YEAR 6	26083.0	1954.2	16089.0	0.0	2272.6	1868.4	404.2	365.9	3042.7	1717.5
YEAR 7	39873.0	4202.4	35696.3	0.0	5042.1	4094.4	947.7	1010.8	7000.6	3592.4
YEAR 8	40500.0	7119.6	61490.5	0.0	8685.5	6807.0	1878.6	2026.4	12590.5	5873.6
YEAR 9	38585.0	9911.3	89777.2	0.0	12681.0	9476.1	3204.9	3121.6	19007.6	8061.1
YEAR 10	45740.0	12888.0	122258.0	0.0	17268.9	12322.1	4946.9	4237.0	26452.8	10198.8
YEAR 11		0.0	238799.0	8094.9	33730.3	16118.9	18859.0	5585.5	66269.7	23227.3
YEAR 12		0.0	230704.1	8094.9	32586.9	15572.5	18262.0	5399.3	64343.1	20501.8
YEAR 13		0.0	222609.1	8094.9	31443.5	15026.1	17665.0	5213.1	62416.5	18080.0
YEAR 14		0.0	214514.2	8094.9	30300.1	14479.7	17068.0	5026.9	60489.9	15929.0
YEAR 15		0.0	206419.3	8094.9	29156.7	13933.3	16471.0	4840.7	58563.3	14019.7
YEAR 16		0.0	198324.3	8094.9	28013.3	13386.9	15874.0	4654.6	56636.7	12325.9
YEAR 17		0.0	190229.4	8094.9	26869.9	12840.5	15277.0	4468.4	54710.1	10824.2
YEAR 18		0.0	182134.4	8094.9	25726.5	12294.1	14680.0	4282.2	52783.5	9493.7
YEAR 19		0.0	174039.5	8094.9	24583.1	11747.7	14083.0	4096.0	50856.9	8315.6
YEAR 20		0.0	165944.6	8094.9	23439.7	11201.3	13486.0	3909.8	48930.4	7273.3
YEAR 21		0.0	157849.6	8094.9	22296.3	10654.8	12889.0	3723.6	47003.8	6351.7
YEAR 22		0.0	149754.7	8094.9	21152.8	10108.4	12292.0	3537.4	45077.2	5537.6
YEAR 23		0.0	141659.8	8094.9	20009.4	9562.0	11695.0	3351.3	43150.6	4819.0
YEAR 24		0.0	133564.8	8094.9	18866.0	9015.6	11098.0	3165.1	41224.0	4185.3
YEAR 25		0.0	125469.9	8094.9	17722.6	8469.2	10501.0	2978.9	39297.4	3627.0
YEAR 26		0.0	117374.9	8094.9	16579.2	7922.8	9904.0	2792.7	37370.8	3135.7
YEAR 27		0.0	109280.0	8094.9	15435.8	7376.4	9307.0	2606.5	35444.2	2703.6
YEAR 28		0.0	101185.1	8094.9	14292.4	6830.0	8710.0	2420.3	33517.6	2324.3
YEAR 29		0.0	93090.1	8094.9	13149.0	6283.6	8113.0	2234.2	31591.0	1991.5
YEAR 30		0.0	84995.2	8094.9	12005.6	5737.2	7516.0	2048.0	29664.4	1700.9
YEAR 31		0.0	76900.3	8094.9	10862.2	5190.8	6919.0	1861.8	27737.8	1445.1
YEAR 32		0.0	68805.3	8094.9	9718.7	4644.4	6322.0	1675.6	25811.2	1222.5
YEAR 33		0.0	60710.5	8094.9	8575.3	4098.0	5725.0	1489.4	23884.6	1028.4
YEAR 34		0.0	52615.6	8094.9	7431.9	3551.6	5128.0	1303.2	21958.1	859.5
YEAR 35		0.0	44520.7	8094.9	6288.5	3005.1	4531.0	1117.1	20031.5	712.9
YEAR 36		0.0	36425.8	8094.9	5145.1	2458.7	3934.0	930.9	18104.9	585.7
YEAR 37		0.0	28331.0	8094.9	4001.7	1912.3	3337.0	744.7	16178.3	475.8
YEAR 38		0.0	20236.1	8094.9	2858.3	1365.9	2740.0	558.5	14251.7	381.0
YEAR 39		0.0	12141.2	8094.9	1714.9	819.5	2143.0	372.3	12325.2	299.6
YEAR 40		0.0	4046.3	8094.9	571.5	273.1	1546.0	186.2	10398.6	229.8
TOTALS	205419.0	37427.6			561964.4	281663.7	317727.0	97601.9	1220137.0	214394.1

DISCOUNT RATE	0.1000
CST OF DBT AT	0.1350
CST OF EQTY AT	0.1475
COST OF CAPIT	0.1412

STRAIGHT LINE DEPRECIATION (BOOK & TAX)
CAPITAL IS 50% DEBT AND 50% EQUITY

Attachment 3



Senator CHAFEE. Thank you, Mr. Baeten. You indicated that the situation in Wisconsin had been a good one for you, and you state on page 3, "The State of Wisconsin has permitted a substantial amount of CWIP in rate base as a standard ratemaking policy for many years."

But it is also my understanding that you are creating a new holding company to be the parent of your present company, and, thus, you would put all of your ratemaking base under FERC.

Mr. BAETEN. First of all, the holding company issue is being discussed in the Commission itself as well as in the State legislature. At the present time we are not allowed to form holding companies in Wisconsin, but even if we did, it does not change the regulation of the utility business. We would still be under the State regulation, the State regulation for the retail customers.

Senator CHAFEE. Is that so? I thought when you went in one of these holding companies you come under FERC.

Mr. BAETEN. Absolutely not.

Senator CHAFEE. Now some witnesses at our previous hearing told the subcommittee, and this question perhaps would go to Mr. Eichorn and others, or to all of you, the witnesses in favor of this measure told us that CWIP in the rate base shifted the risk of the noncompletion of powerplants to the consumer. How do you respond to that charge? You are involved with Seabrook, there have been some errors made there. I don't believe in the charge that is sometimes made that it is all the Government's fault for changing everything. What do you say to that?

Mr. EICHORN. I just as soon not try to defend Seabrook one way or the other, Mr. Chairman. Certainly as far as whether CWIP is included in rate base or not is not germane as to whether a plant should be canceled if it is canceled.

Senator CHAFEE. I am speaking more of noncompletion than I am of cancellation.

Mr. EICHORN. Well, either way, sir, if it is not completed, I assume it would be canceled. If it is canceled, then there is a fact of writeoff, and the only thing that happens in that instance is that the same amount of plant has to be recovered either from the stockholder or from the ratepayer. The only thing that is different as far as whether we have CWIP or not is who pays for the interest during the period which it was under construction, and that is lessened by the fact that we have CWIP in rate base.

Mr. HARRELD. The key point here, Senator, is that when you have CWIP in the rate base, none of the principal amount of the cost of the plant, the bricks and mortar, are being paid for by the customer. It's only the current financing cost. All it does is keep us from having to go borrow additional money to pay the cost of the money already borrowed, so the risk is still on the stockholder in terms of the plant that is not yet completed.

Mr. MUNSEY. In other words, the AFDC that would have been added to the plant if CWIP was not in the rate base would be part of the amount that would be considered by the Commission for amortization if the plant is canceled.

Senator CHAFEE. Thank you all very much for coming. We are going to keep the record open for two weeks if any of you want to submit additional statements. If any of you do, send it along to the committee staff. Perhaps we might have questions to be addressed to you in writing. If we do, we would appreciate it if you would get a prompt response in. Thanks again for coming. The hearing is adjourned.

[Whereupon, at 10 a.m., the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses to Additional Committee Questions

JAMES A. McCLURE, IDAHO, CHAIRMAN
MARK O. HATFIELD, OREG.
LOWELL P. WEICKER, JR., CONN.
PETE V. DOMENICI, N. MEX.
MALCOLM WALLOP, WYO.
JOHN W. WARNER, VA.
FRANK H. MURKOWSKI, ALASKA
DON NICKLES, OKLA.
CHIC HECHT, NEV.
JOHN H. CHAFEE, R.I.
JOHN HEINZ, PA.
DANIEL J. EVANS, WASH.
J. BENNETT JOHNSTON, LA.
DALE BUMPERS, ARK.
WENDELL H. FORD, KY.
HOWARD M. METZENBAUM, OHIO
SPARK M. MATSUNAGA, HAWAII
JOHN MELCHER, MONT.
PAUL E. TSONGAS, MASS.
BILL BRADLEY, N.J.
CARL LEVIN, MICH.
MICHAEL D. HATHAWAY, STAFF DIRECTOR
CHARLES A. TRABANDT, CHIEF COUNSEL
D. MICHAEL HARVEY, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C. 20510

May 4, 1984

The Honorable Jan Mares
Assistant Secretary for Policy,
  Safety and Environment
U.S. Department of Energy
1000 Independence Avenue S.W.
Washington, D.C. 20585

Dear Mr. Mares:

The attached questions are in follow-up to your appearance before the Energy Regulation Subcommittee's April 12, 1984, hearing on S. 817, S. 1069 and H.R. 555.

Please provide the Subcommittee with your responses to these questions by the close of business May 18, 1984.

Sincerely,

Frank H. Murkowski
Chairman

Enclosure
FHM:HU:bn

QUESTIONS FROM VARIOUS REPUBLICAN MEMBERS OF THE SUBCOMMITTEE FOR ASSISTANT SECRETARY JAN MARES

1) On page 1 of your written testimony you state that the Department opposes the enactment of the three pending bills because they would be harmful to consumers by making electricity less reliable and in the long-run more expensive.

   Q. Would you provide in greater detail your assessment of the impact on electricity rates, long term electric supply and system reliability of the three pending bills?

2) FERC Chairman O'Connor stated in his testimony that the principle difference between CWIP and AFUDC is with respect to the timing of cost recovery.

   Q. Is it not true that over the life of a new facility AFUDC results in customers being charged more than they would have been charged under full or partial CWIP?

3) Does Order 298 change how FERC treats cancelled and abandoned facilities? Does Order 298 transfer any of the risk of plant cancellation from shareholders to ratepayers?

4) To what extent does CWIP in rate base reduce plant construction costs by increasing the constructing utility's bond ratings, thereby reducing its cost of borrowing? Please explain in detail using examples.

5) Would a no-CWIP in rate base policy bias utility planning decisions against large scale, efficient bulk power facilities?

6) Does CWIP in rate base stimulate the construction of unneeded new facilities? How many facilities under construction today are for additional power capacity, and how many are replacements for over-aged or retiring facilities? If there were no commencement of new construction, how long would it be before electric shortages would begin to appear?

7) Should ratepayers begin to pay now for facilities they will not receive the benefit of until a later date?

   a) Will this result in an intergenerational inequity?

   b) Will this be unfair to those who may move out of the utility's service area?

   c) Is it appropriate to charge wholesale customers for the construction of new power generation facilities when they may be trying to build their own facilities?

8) Does CWIP in rate base help send the appropriate price signals to customers?

9) Is CWIP in rate base incongruent with the general public policy of having customers begin to pay for facilities only when they become "used and useful"?

10) Does Order 298 result in a price squeeze for wholesale purchasers of electricity who are in competition with other utilities?

11) Does Order 298 reduce the incentives for utilities to look at alternative forms of power generation: e.g., conservation; load management; cogeneration; increased use of interties and exchanges; and less capital intensive means of power production?

12) What impact would the three pending bills (S. 817; S. 1069; H.R. 555) have on:

    a) electric rates (both wholesale and retail);

    b) new facility construction costs;

    c) the electric utility industry in terms of their:

        i) bond ratings;

        ii) interest rates;

        iii) stock value;

        iv) construction plans.

Questions from Senator J. Bennett Johnston

Subcommittee on Energy Regulation
Hearing on S. 817, S. 1069 and H.R. 555
April 12, 1984

1. Please provide the Committee with a summary discussion of the reasons you believe that the public interest is better served by implementation of the 1983 FERC construction-work-in-progress (CWIP) rule as opposed to the regulatory regime that existed prior to the rule.

2. What percentage of electricity sales are covered by the FERC rule? If the full 6% per year rate increase were granted to all eligible applicants with ongoing construction programs, what would be the likely effect on retail electricity rates nationally?

3. How does the FERC rule provide for compensation for ratepayers who paid CWIP to a company that mismanaged a construction project into unwarranted cost overruns?

4. Why should present consumers of electricity pay financing costs for a facility that is not yet used and useful? Doesn't this force present ratepayers to subsidize future ratepayers?

5. Please explain the origin of the concept of "allowance for funds used during construction" (AFUDC). When allowance for funds used during construction becomes a significant percentage

of the net income of an electric utility, as was the case in the 1970's, what is happening? In 1980 AFUDC was 46% of net income. What is the figure for 1981, 1982 and 1983?. Is the trend in the share of income provided by AFUDC a cause for concern? Explain.

Provide the Committee with estimates of the trend in the return earned by U.S. investor-owned electric utilities with and without the AFUDC component of income. Is this trend a cause for concern? Explain.

How does the 1983 FERC rule affect these trends?

6. The American Public Power Association's testimony at this hearing contends (pp. 5-6) that the financial health of the nation's investor-owned utilities has improved in recent years and is now quite good. Would you comment on that?

7. What do you consider to be a reliable projection of required additions to U.S. electric generation capacity for the U. S. in order to meet the demand for electricity in 1990? in 1995? in 2000? How much of this increase in capacity is represented by nuclear powerplants now under construction? Now in the planning stages? How much by coal-fired powerplants now under construction? Now in the planning stages? Show separately the effects of retiring existing plants, the increase in the

intensity of electricity use in the U.S. energy consumption mix, and constant-intensity growth in demand.

Do you think historical practice in retiring plants will continue to apply? Why?

Do you think historical trends in the electricity intensity of energy consumption will continue? Why?

8. What will be the principal effects of the FERC 1983 rule on plants now under construction? What will be the principal effects of this rule on plants in the planning stage for which construction has not been begun? To what extent will the rule encourage utilities to undertake new construction projects? How critical to the meeting of projected electricity demand is the continued implementation of the FERC rule? Please justify your answer.

9. Under the FERC 1983 rule, how is the burden of plant abandonment apportioned between ratepayers and shareholders when CWIP has been granted? In particular, what happens to the return already paid to the utility under CWIP if the plant is abandoned? Would the utility's new rates be designed so as to reimburse the ratepayers for the return paid previously, or would the ratepayers continue to be liable for the rate of return already

paid? What is the effect of this rule on risk to ratepayers associated with abandonment?

10. What evidence would you recommend the Committee rely on in assessing whether application of the FERC rule will lower consumer costs? Please quantify this savings in a specific case, or, if this is not possible, in a hypothetical case of your own choice.

11. J. Bertram Solomon, a witness at the hearing, presented testimony to the effect that granting CWIP always increases the cost of electricity to ratepayers. Please comment on this assertion and on the Solomon analysis. A copy of this analysis is attached.

12. Please provide the Committee with a discussion of State law and regulation (on a state-by-state basis) as it affects CWIP in electric utility rates. Compare and contrast State regulation with the 1983 FERC rule. What are the principal differences between the approach the FERC has taken and the approach taken by the States that allow CWIP in electric utility rates? What evidence is there that differences between FERC treatment of CWIP and State treatment are leading, or could lead, to a "price squeeze" on certain utilities?

13. What analysis has been done of the impact of the 1983 FERC rule on the competitive balance among various types of utilities? Testimony of the American Public Power Association at the hearing identifies adverse competitive impact on more than 900 local publicly-owned utilities as a major defect in the 1983 FERC rule. Please comment.

14. Inclusion of CWIP in an electric utility's rate base on a case-by-case basis could lead to a much more timely review by FERC of the prudence of construction expenditures. Explain, using specific examples, if possible, how this would happen under the FERC rule. Contrast this FERC rate treatment with the situation that prevailed prior to adoption of the 1983 rule. Testimony of the American Public Power Association (p. 6) contends that the FERC rule provides "blanket relief through virtually automatic allowance of CWIP". Please comment.

15. Please describe, using specific examples if possible, how the FERC rule operates to provide for the systematic assessment of least cost alternatives to conventional powerplant construction. What rights do intervenors have to contest a utility's analysis of alternatives? To what extent does the FERC staff challenge this analysis?

16. H.R. 555 provides for inclusion of CWIP in a utility's rate base if certain showings are made. Please provide the Committee with a "walk through" of the application of a utility for inclusion of CWIP in its rate base under H.R. 555. Use a specific application if possible. Compare this process with the process under the 1983 rule. For example, what are the differences with respect to evidence? Intervention? Other administrative procedures? Time to resolve the case?

What is the significance of the figure of 40 percent in H.R. 555 (internally generated funds/construction expenditures)? Does the choice of this figure appear to be based on accepted methods of assessing the financial health of an electric utility? Explain.

17. It is contended (Rep. Ottinger's statement, pp. 6-7) that the FERC rule provides an opportunity for utilities to "circumvent state regulation which presently sharply limits the inclusion of CWIP in retail rate bases". Please comment.

18. Chairman O'Connor's testimony states (pp. 6-7) that, "The deterioration in investment quality of utility bonds necessarily meant that utilties would have to pay higher interest rates to attract capital in competition with other investment opportunities. As investment in utility stocks and bonds became

less secure, utilities had to pay a premium to attract new sources of capital." Please provide appropriate data from the Commission's files to document both statements.

What is your best estimate of the interest rate penalty paid by a utility in securing financing if it is not allowed CWIP? That is, what interest rate could a utility expect to pay for a given project if it is financed with AFUDC as compared to the interest rate for the same utility for the same project if CWIP were allowed?

19. Using an actual case prior to adopting the 1983 CWIP rule, where CWIP was allowed under then applicable regulations for pollution control equipment or fuels conversion equipment, please provide the Committee with the actual rates charged by a utility installing such equipment and contrast those rates with the rates that would have been charged if the AFUDC method had been used.

20. Please provide the data and assumptions used in preparing Chart II and IIA appended to Chairman O'Connor's testimony.

21. Please provide the FERC's rationale in rejecting the use of a "financial difficulty" test before allowing CWIP.

22. Assume that a utility whose sales are entirely wholesale sales in interstate commerce with a $10 billion rate base undertakes construction of a $2 billion powerplant, that construction takes seven years, and that the plant has a 20 year useful life. Assume further that interest rates during construction average 12%. (Please specify whatever additional assumptions about fuel prices are necessary to use in order to answer the hypothetical questions posed.) What would happen to that utility's rates once the powerplant goes into service if AFUDC were used, as compared to the limited CWIP approved by the FERC? What would happen to that utility's rates if construction of the powerplant were to be abandoned after five years and $1.5 billion had been spent with AFUDC? What would happen under the same circumstances if the limited CWIP apoproved by the FERC had been allowed? Please explain in detail.

23. The 1983 rule has been challenged in court. What is the status of the case? When is the court likely to issue a decision? Please provide a brief explanation of the issues raised in the litigation.

Southern Engineering Company of Georgia
1800 Peachtree St., N.W.
Atlanta, GA [illegible]
(404) 352-9200

Southern Engineering

April 23, 1984

Alex Radin, Executive Director
American Public Power Association
2301 M Street, N.W.
Washington, D.C. 20037

RE: Graphs Comparing the Present Value of the Cumulative Revenue Requirements (or Customer Costs) Under 50% versus 0% CWIP In Rate Base

Dear Alex:

During the presentation of my testimony before the Senate Subcommittee on Energy Regulation on April 12, Chairman Murkowski asked for a comparison of the cost to consumers of 50% of CWIP in rate base versus no CWIP in rate base. I am enclosing a graph labeled Exhibit C which shows this comparison. Just as I explained during my testimony, the lines showing the revenue requirements to be collected from consumers are closer together than those on my graph comparing 100% CWIP in rate versus no CWIP in rate base on a present value basis. However, as I also explained, just as with the 100% versus 0% case, the graph shows that including CWIP in rate base is more costly to consumers in each and every year of the construction period and the service life until the very last year, when they become equal. Thus, as with the 100% versus 0% case, a consumer would have to be served by the utility for the entire 37-year construction period/service life of the unit and the utility would have to refrain from building any additional facilities during that period for the consumer to even get to the breakeven point where including CWIP, or a portion of CWIP, in rate base cost him/her the same as not including CWIP in rate base.

I am also including Table 4 which shows the development of the revenue requirements under the inclusion of 50% of CWIP in rate base.

If you have any questions concerning my analysis, please give me a call.

Sincerely,

J Bertram Solomon

J. Bertram Solomon, Manager
Economic & Regulatory Services

JBS/fc
Enclosures

STATEMENT OF J. BERTRAM SOLOMON
MANAGER, ECONOMIC & REGULATORY SERVICES
SOUTHERN ENGINEERING COMPANY
On
S. 817, S. 1069 AND H.R. 555
"CONSTRUCTION WORK IN PROGRESS POLICY ACT OF 1983"
BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
APRIL 12, 1984

My name is J. Bertram Solomon. I am manager of the Economic and Regulatory Services department of Southern Engineering Company, a full service financial, economic and engineering consulting firm. My particular area of specialty is electric utility ratemaking. I have provided expert ratemaking testimony before a number of state public utility commissions and before the Federal Energy Regulatory Commission (FERC). The areas of expert testimony I have presented include: the proper ratemaking treatment of accounting practices and the effects of appropriate alternative accounting methods on expenses, income taxes, revenues, rate base and cost of capital; proper methods of cost allocation, required rates of return and margin levels, proper methods of measuring working capital requirements, and rate design. I have also prepared and filed comments before the FERC in several generic rulemaking proceedings. Additionally, I have participated in preparing and

in rate base because they will gain hundreds of millions of dollars in increased rates from it. One of their primary arguments is that it is cheaper for the customers of the utilities if CWIP is included in rate base. This is definitely not the case. And it is this erroneous contention that I want to discuss with you today. The Edison Electric Institute (EEI), on behalf of its member investor-owned electric utilities, constructed a model for comparing the rates to consumers with CWIP included in rate base versus the cost to consumers with CWIP not included in rate base for use in its lobbying efforts when H.R. 555 was being considered by the House of Representatives. This model purportedly proved the utilities' contention that including CWIP in rate base was less costly to consumers. Indeed, EEI's model does make it appear that including CWIP in rate base is less costly; however, there is a very dramatic flaw in EEI's model. That flaw is that the model makes the assumption that money has no time value to the consumers of the utilities.

Obviously, this assumption is wrong. Almost every financial decision made in our economy today is based upon either an explicit or an implicit recognition of the time value of money. This is true from the most basic level of our economy, a single individual, to giant businesses such as General Motors, to the federal government. A rational person would not take his life savings down to the bank and say to the banker, "here are my life savings, keep them for me for a few years when I will be back to pick them up." Such a person would expect to be paid interest on his money while it was in the possession of the banker. A large corporation

customers over the entire construction and service periods under both alternative methods of treating CWIP. The two graphs are marked as Exhibit A and Exhibit B. The information from which the graphs were constructed is contained in the attached Tables 1 and 2. The nominal annual and cumulative revenue requirements were taken directly from the EEI handout. The present value of the annual and cumulative revenue requirements were developed by applying a 10% discount rate to EEI's nominal dollars. This discount rate assumes that the time value of money to the consumers is the same as the rate of return required by the utility.

The first graph, Exhibit A, reproduces EEI's handout. It shows that, in terms of nominal dollars, the utility's revenues to be recovered from its customers would be higher, under the inclusion of CWIP in rate base, during the seven year construction period, but would be lower during the remaining 30-year useful life of the facility during which it would be providing service than the revenues which would be collected if CWIP were not included in rate base. If CWIP is not included in rate base, there are no revenue collections from customers during the seven-year construction period. On the other hand, when CWIP is included in rate base, there are significant revenue collections from customers during the seven-year construction period; however, the revenue collections during the 30-year service life are shown to be smaller under the CWIP in rate base method. The total revenues collected under the CWIP in rate base method are $2,960,000,000 - $410,000,000 during the seven-year construction period and $2,550,000,000 during the 30-year service life. With CWIP not included in rate base, $3,794,500,000 in revenues would

under both methods would be the same. This means that for a consumer to just benefit equally from either method he would have to remain a customer of the utility for all of these 37 years. It also means that the utility serving this consumer would have to refrain from building any additional facilities because, if the utility did build additional facilities, the consumer's break even point would be pushed out even farther - to the end of the service life of the new facility.

There is only one conclusion which can be drawn from these graphs; i.e., that, when the time value of money to the customers of the utilities is taken into consideration, including CWIP in rate base will always be more costly to consumers than not including CWIP in the rate base.

EXHIBIT B

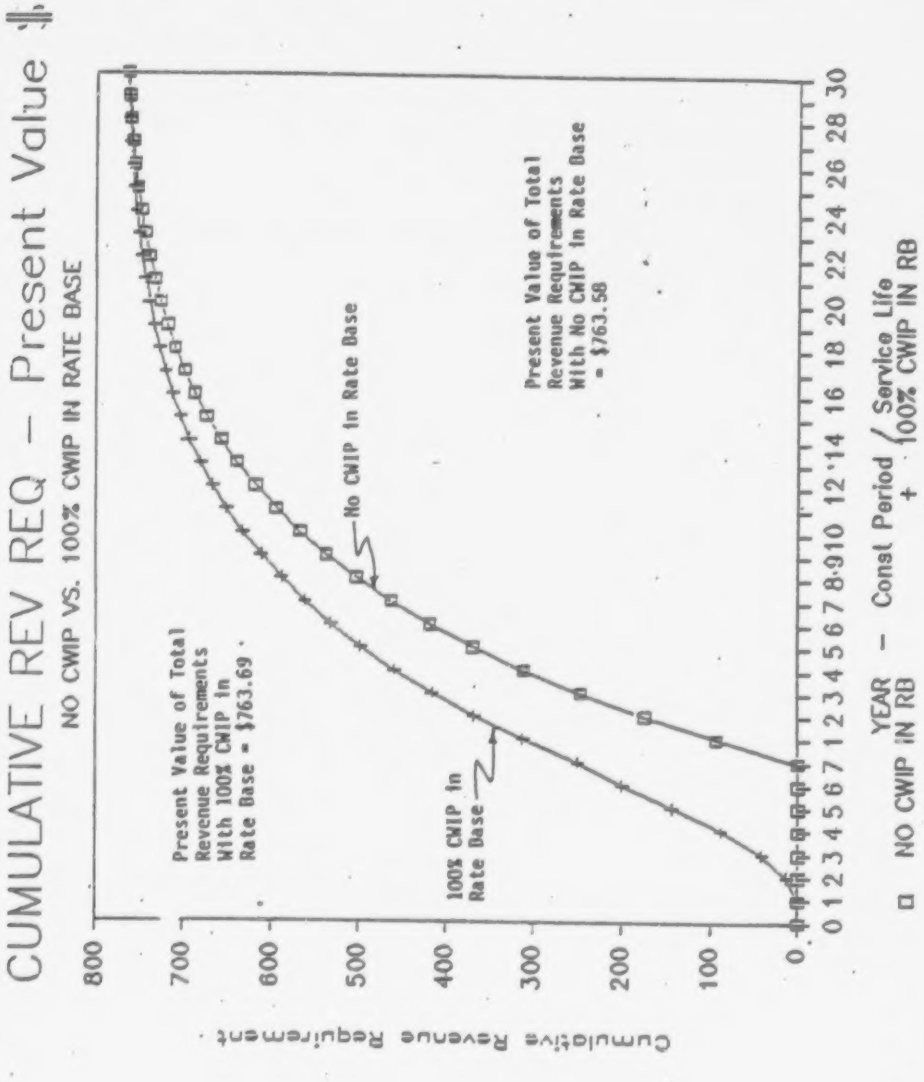

CUMULATIVE REV REQ - Present Value
NO CWIP VS. 100% CWIP IN RATE BASE
Cumulative Revenue Requirement
800
700
600
500
400
300
200
100
0
0 1 2 3 4 5 6 7 1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30
YEAR - Const Period / Service Life
□ NO CWIP IN RB
+ 100% CWIP IN RB
Present Value of Total Revenue Requirements With 100% CWIP In Rate Base = $763.69
100% CWIP In Rate Base
No CWIP In Rate Base
Present Value of Total Revenue Requirements With No CWIP In Rate Base = $763.58

TABLE 2

REBUTTAL TO EEI CWIP MODEL SOUTHERN ENGINEERING COMPANY

REVENUE REQUIREMENTS UNDER
NO CWIP IN RATE BASE; 10% RATE OF RETURN; 10% DISCOUNT RATE
(Dollars in Millions)

YEAR (a)	CONSTRUCTION VS OPERATION PERIOD (b)	ANNUAL REVENUE REQUIREMENT (c)	CUMULATIVE REVENUE REQUIREMENT (d)	PRESENT VALUE OF ANN REV RQRMT (e)	CUME PRESENT VALUE OF ANN REV RQRMT (f)
0	0			0.00	0.00
1	1	0	0	0.00	0.00
2	2	0	0	0.00	0.00
3	3	0	0	0.00	0.00
4	4	0	0	0.00	0.00
5	5	0	0	0.00	0.00
6	6	0	0	0.00	0.00
7	7	0	0	0.00	0.00
8	1	198.4	198.4	92.56	92.56
9	2	193.4	391.8	82.02	174.58
10	3	188.5	580.3	72.67	247.25
11	4	183.5	763.8	64.32	311.57
12	5	178.6	942.4	56.91	368.47
13	6	173.6	1,116.0	50.29	418.76
14	7	168.6	1,284.6	44.40	463.16
15	8	163.7	1,448.3	39.19	502.35
16	9	158.7	1,607.0	34.54	536.88
17	10	153.8	1,760.8	30.43	567.31
18	11	148.8	1,909.6	26.76	594.07
19	12	143.8	2,053.4	23.51	617.59
20	13	138.9	2,192.3	20.65	638.23
21	14	134.0	2,326.3	18.11	656.34
22	15	129.0	2,455.3	15.85	672.19
23	16	124.0	2,579.3	13.85	686.04
24	17	119.0	2,698.3	12.08	698.12
25	18	114.1	2,812.4	10.53	708.65
26	19	109.1	2,921.5	9.15	717.80
27	20	104.2	3,025.7	7.95	725.75
28	21	99.2	3,124.9	6.88	732.63
29	22	94.2	3,219.1	5.94	738.57
30	23	89.3	3,308.4	5.12	743.69
31	24	84.3	3,392.7	4.39	748.08
32	25	79.4	3,472.1	3.76	751.84
33	26	74.4	3,546.5	3.20	755.04
34	27	69.4	3,615.9	2.72	757.76
35	28	64.5	3,680.4	2.30	760.05
36	29	59.5	3,739.9	1.92	761.98
37	30	54.6	3,794.5	1.61	763.58
37	37	3,794.5	3,794.5	763.58	763.58

Note: Revenue requirements in columns C and D are from EEI handout

Exhibit C

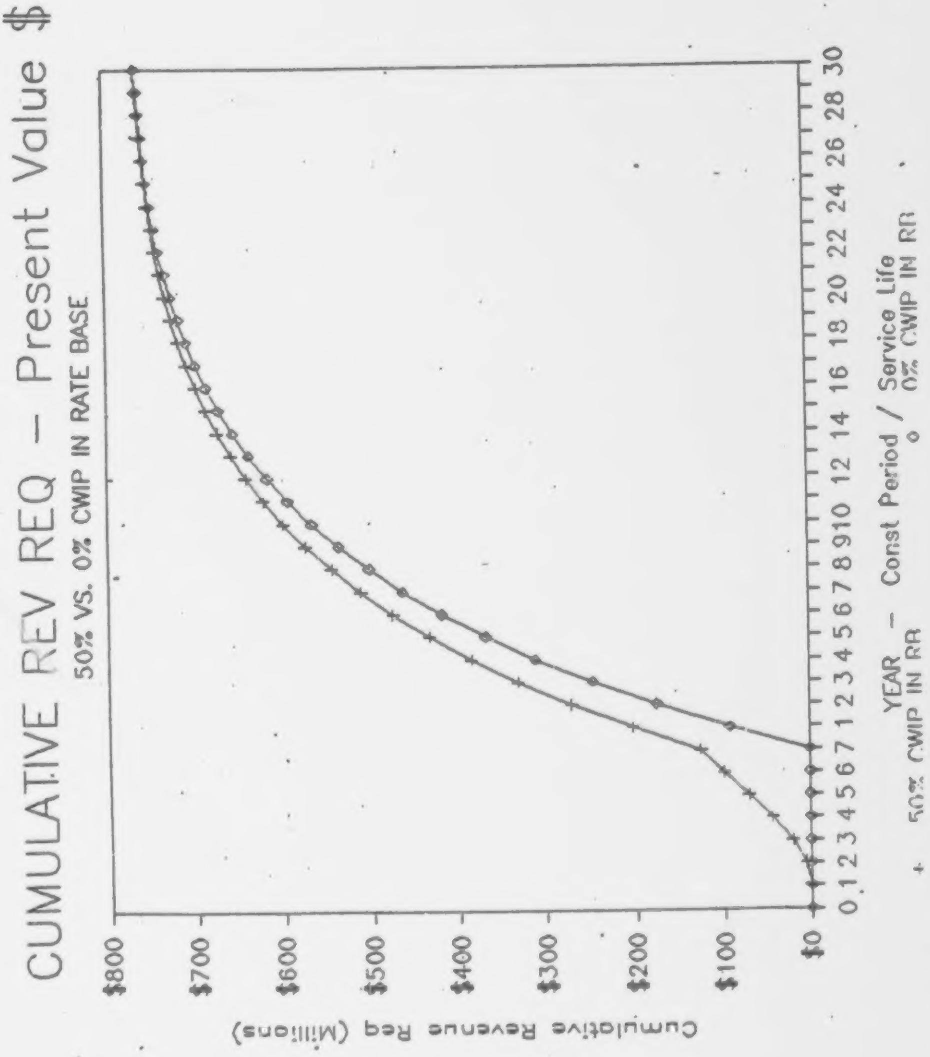

CUMULATIVE REV REQ - Present Value $
50% VS. 0% CWIP IN RATE BASE
Cumulative Revenue Req (Millions)
$800
$700
$600
$500
$400
$300
$200
$100
$0
0 1 2 3 4 5 6 7 1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30
YEAR - Const Period / Service Life
+ 50% CWIP IN RB
o 0% CWIP IN RB

Table 4

50% OF CWIP IN RATE BASE; 10% RATE OF RETURN; 10% DISCOUNT RATE
(Dollars in Millions)

YEAR	CONSTRUCTION VS OPERATION PERIOD	ANNUAL CONSTRUCTION COSTS	CWIP BALANCE	AFUDC	RATE BASE	RETURN	DEPRECIATION	ANNUAL REVENUE REQUIREMENT	CUMULATIVE REVENUE REQUIREMENT	PRESENT VALUE OF ANN REV RQMNT	CUME PRESENT VALUE OF ANN REV RQMNT
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
0	0	0	0.0	0.0	0.0	0.0	0.0			0.00	0.00
1	1	10	10.0	0.5	5.0	0.5	0.0	0.5	0.5	0.45	0.45
2	2	120	130.5	6.6	65.0	6.5	0.0	6.5	7.0	5.37	5.83
3	3	260	397.1	20.2	195.0	19.5	0.0	19.5	26.5	14.65	20.48
4	4	300	717.3	37.2	345.0	34.5	0.0	34.5	61.0	23.56	44.04
5	5	200	954.5	50.9	445.0	44.5	0.0	44.5	105.5	27.63	71.67
6	6	100	1105.4	61.0	495.0	49.5	0.0	49.5	155.0	27.94	99.61
7	7	10	1176.5	67.6	500.0	50.0	0.0	50.0	205.0	25.66	125.27
8	1				1244.1	124.4	41.5	165.9	370.9	77.39	202.66
9	2				1202.6	120.3	41.5	161.7	532.6	68.59	271.25
10	3				1161.2	116.1	41.5	157.6	690.2	60.76	332.01
11	4				1119.7	112.0	41.5	153.4	843.6	53.78	385.79
12	5				1078.2	107.8	41.5	149.3	992.9	47.57	433.36
13	6				1036.8	103.7	41.5	145.1	1138.1	42.04	475.40
14	7				995.3	99.5	41.5	141.0	1279.1	37.13	512.53
15	8				953.8	95.4	41.5	136.9	1415.9	32.76	545.29
16	9				912.4	91.2	41.5	132.7	1548.6	28.88	574.17
17	10				870.9	87.1	41.5	128.6	1677.2	25.43	599.61
18	11				829.4	82.9	41.5	124.4	1801.6	22.38	621.98
19	12				787.9	78.8	41.5	120.3	1921.9	19.66	641.65
20	13				746.5	74.6	41.5	116.1	2038.0	17.26	658.91
21	14				705.0	70.5	41.5	112.0	2150.0	15.13	674.04
22	15				663.5	66.4	41.5	107.8	2257.8	13.25	687.28
23	16				622.1	62.2	41.5	103.7	2361.5	11.58	698.86
24	17				580.6	58.1	41.5	99.5	2461.0	10.10	708.97
25	18				539.1	53.9	41.5	95.4	2556.4	8.80	717.77
26	19				497.6	49.8	41.5	91.2	2647.6	7.66	725.43
27	20				456.2	45.6	41.5	87.1	2734.7	6.64	732.07
28	21				414.7	41.5	41.5	82.9	2817.6	5.75	737.82
29	22				373.2	37.3	41.5	78.8	2896.4	4.97	742.79
30	23				331.8	33.2	41.5	74.6	2971.1	4.28	747.06
31	24				290.3	29.0	41.5	70.5	3041.6	3.67	750.74
32	25				248.8	24.9	41.5	66.4	3107.9	3.14	753.88
33	26				207.4	20.7	41.5	62.2	3170.1	2.68	756.56
34	27				165.9	16.6	41.5	58.1	3228.2	2.27	758.83
35	28				124.4	12.4	41.5	53.9	3282.1	1.92	760.75
36	29				82.9	8.3	41.5	49.8	3331.9	1.61	762.36
37	30				41.5	4.1	41.5	45.6	3377.5	1.34	763.70
37	37	1000	1244.1	244.1	.0	2133.4	1244.1	3377.5	3377.5	763.70	763.70

Department of Energy
Washington, D.C. 20585

June 29, 1984

Honorable Frank H. Murkowski
Chairman
Subcommittee on Energy Regulation
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On April 12, 1984, Assistant Secretary Jan W. Mares appeared before the Energy and Natural Resources Subcommittee on Energy Regulation to discuss S. 817, S. 1069, and H.R. 555.

Following that hearing, you submited written questions for our response. Enclosed are answers to those questions with the exception of answers 11 and 22, submitted by minority members, which will be sent just as soon as they are completed.

If you have any questions, please call Cathy Carey or Tom Pretorius of my staff on 252-4277. They will be happy to assist you.

Sincerely,

Thomas H Pretorius
for Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosure

cc: Mr. Al Astrin

# POST-HEARING QUESTIONS AND ANSWERS
from
Majority Members

Relating to the

APRIL 12, 1984, HEARING

Before the

SUBCOMMITTEE ON ENERGY REGULATION

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

WITNESS: JAN W. MARES

Question 1: On page 1 of your written testimony you state that the Department opposes the enactment of the three pending bills because they would be harmful to consumers by making electricity less reliable and in the long-run more expensive. Would you provide in greater detail your assessment of the impact on electricity rates, long-term electric supply and system reliability of the three pending bills?

Answer 1: The three bills essentially call for a return to the former FERC Order 555, wherein only "financially distressed" companies could apply for and expect to receive CWIP. Only a few companies ever applied and none were granted relief by the Commission. Consequently, the effect of these bills can essentially be assumed to be the difference between the EIA's projections (done for FERC in March of 1983) of the long-term effects of FERC Order 296 and the prior FERC Order.

According to EIA, rates nationally with the new FERC Order were projected to be 1.1 percent higher in 1983, 2.27 percent higher in 1985, dropping off to .56 percent higher in 1990 and .69 percent higher in 1995. These patterns of projected electricity rates are the result of the assumptions that went into the analysis. The assumptions on rate of demand growth and inflation rate are particularly important in determining when (if ever) the rates with CWIP in rate base are lower than the rates that exclude CWIP. In any respect the rate differentials are clearly small and declining through time in this analysis.

We believe there is a major fault in studies such as the EIA effort discussed above in that they fail to account for the likely supply response on the part of utility managements when faced with rate policies which exclude CWIP in rate base. It is unrealistic to assume that electric power companies will pursue the same level and type of capital investment in new supply under regulatory policies that include or exclude CWIP in rate base. While the EIA analysis has this shortcoming, it is nevertheless useful for showing the effects resulting from CWIP.

Regulatory policies which exclude CWIP will induce the industry to pursue "capital minimizing" strategies which over time will have profound effects on electricity and possibly the integrity of electricity supplies as well. Moreover, it has been amply demonstrated over the past several years that undertaking a large capital investment without CWIP in rate base will seriously erode the financial integrity of a utility company. In the future, utilities which do not recieve CWIP in rate base can be expected to opt for less capital intensive strategies which generally consume higher cost fuels (oil and gas) and result in higher electricity prices in the long term.

In 1982 as part of the Electricity Policy Project, the Department sponsored an analysis conducted by Harvard University's Energy and Environmental Policy Center. The attached Table One presents the results from this study showing the effects of allowing 50 percent CWIP (state level) versus a policy of zero CWIP. Six actual utilities were chosen and collectively are representative in the sense that they reflect different combinations of conditions typical of the industry nationally. Columns 2 and 3 provide net present values using both a private (6 percent real) and social (3 percent real) discount rate. Column 4 provides the internal rates of return (IRR) to consumers from their investment in CWIP charges. We found it significant that for each utility, the IRR (ranging from 23 percent to 49 percent) is considerably higher than any other reasonable investment opportunity a consumer is likely to face. This result clearly supports the argument that CWIP is a long-term net benefit to consumers.

Also of interest are the study's findings regarding investment strategies with and without rate repressive policies such as no-CWIP. Each of the six representative utilities was asked to provide two different investment and operating strategies under two alternative regulatory scenarios. The first strategy was to correspond to regulatory treatment under a "capital attraction" scenario. The second strategy would be the utility's response to a "rate suppressive" regulatory regime.

Table Two (attached) summarizes the major features of the two regulatory climates in which the utility would be allowed to (and would actually) earn its cost of capital. The cost of equity capital was assumed to equal a real rate of return of 7 percent, or a nominal return ranging from 13 to 15.5 percent over the forecast period for the Data Resources Inc. inflation forecast adopted. This real return on equity was chosen as an approximation of the utility's actual cost of equity capital based on discussions with each of the utilities, financial analysts on Wall Street, evidence in recent rate cases, and independent academic estimates. The cost of debt capital was based on bond prices from the DRI forecast and the company's own embedded cost of debt under the assumption that the utility would maintain a AAA bond rating under this favorable regulatory climate.

The "rate suppressive" regime was defined as a regulatory climate in which the utility could expect to earn a real return on equity three hundred basis points below its cost. This return was chosen because it approximately corresponds to the real return the utility industry has realized during most of the post-embargo era. The cost of debt capital was likewise based on the DRI forecast of bond prices and the company's own embedded cost of debt under the assumption that the utility would maintain a BBB bond rating in this rate suppressive regulatory climate.

Each company used its own forecasted load growth while fuel price projections were based on forecasts by the Department of Energy and the Electric Power Research Institute. These forecasts assumed a two percent real escalation in the price of oil and natural gas and a one percent real escalation in the price of coal (while nuclear fuel prices were set according to company estimates based on their long term contracts).

Table Three (attached) summarizes the capital expenditures and expenses for fuel and purchased power expenses for each of the six utilities under the "capital attraction" (including CWIP) versus "rate suppressive" (excluding CWIP) scenarios and their corresponding investment and operating strategies.

From Table Three, it is clear that there is a dramatic difference between each of the utility's choice of inputs for the two alterntive scenarios. Under the capital attraction scenario, when the utility expects to earn its cost of capital, each has chosen a considerably larger capital budget and a corresponding smaller level of fuel and purchased power expenses than under the rate suppressive regime.

For example, the Coal Conversion utility chooses a $9.9 billion capital budget and spends $29.9 billion on fuel and purchased power in the capital attraction scenario while it invests only $4.0 billion but spends over $43.2 billion on fuel and purchased power under rate suppression. Similarly, the Oil Displacement utility chooses a $22.1 billion capital budget and spends $77.2 on fuel and purchased power in the capital attraction scenario but invests only $12.9 billion and spends $95.3 billion on fuel and purchased power. Only the Gas/Coal utility invests more under rate suppression. The Gas/Coal utility actually builds 2000 megawatts more capacity in the capital attraction scenario so that the higher capital budget under rate suppression in large part reflects the higher (nominal) capital costs of the 6000 megawatts it waits until the year 1998 to build. And because it foregoes economic gas displacement under rate suppression before 1998, its fuel and purchased power expenses are higher under rate suppression than under capital attraction ($201.0 vs. $152.1 billion).

The fourth table presents the net present value of the costs to the consumer of "rate suppression" for each of the six utilities, based on the above scenarios. Column two presents the cost of "rate suppression" for the "private discount rate," which was assumed to be equal to a real return of 6%. Column three presents the costs of rate suppression for the "social discount rate," which was assumed to be equal to a real return of 3%.

These costs were arrived at by calculating the net present value of the difference in revenue requirements between the two scenarios. A positive number indicates a net cost to ratepayers from rate suppression. In addition, the internal rate of return equating the difference in the two streams to zero appears in column four.

While the magnitudes vary considerably, the direction of the results is clear: "rate suppression" (excluding CWIP) entails a net cost to ratepayers for each of the six utilities under both assumed discount rates.

With respect to reliability we can again turn to our six representative utilities. Table 5 presents two indirect measures of the reliability penalty caused by rate suppression. Column two presents each utility's ordinary reserve margin in the year 2000 under the capital attraction scenario while column three provides that reserve margin in the year 2000 for the rate suppressive scenario. The "ordinary reserve margin" equals the utility's own capacity it has to meet load plus the capacity it has purchased from other sources. It is to be distinguished from the "own reserve margin" which only includes the utility's own capacity. By the ordinary reserve margin criterion, several of the utilities wind up under rate suppression with reserve margins well below the 15% to 20% necessary to maintain reliabilty. For example, the Gas/Coal utility's reserve falls to 9.6% while the Coal/Nuclear's reserve falls to a perilously low 4.6%.

In contrast, the Coal Conversion, Gas/Coal, and Gas Displacement utilities maintain ordinary reserve margins in excess of 20% under rate suppression, but it is important to remember two things. First, much of this reserve is in fact non-economic petroleum capacity. Second, the own reserve margin for the Gas Displacement utility is only 7%, with the difference made up in outside purchases. Simarily, while the ordinary reserve margin is both low and the same at 12% under both scenarios for the Purchase/Coal utility, there is a dramatic difference in its own reserve margin. Under the capital attraction scenario, it builds enough new plants to be entirely self-sufficient in generation and still maintain an albeit slender own reserve of 4%. However, under rate suppression, it relies on purchases for over one-third of its capacity needs and has a negative 28.5 percent own reserve. This is particularly significant because the Purchase/Coal utility has no guarantee that other utilities will build the capacity it is planning to purchase. If rate suppression is the prevailing regulatory scenario and other utilities likewise respond with capital minimization, the capacity may not exist to buy.

The second measure of reliability is each utility's average age of plant under capital attraction versus rate suppression. These figures are displayed in columns four and five. Note that in each case, the average age of plant is higher under rate suppression because the non-retirement of plant is an important component of the utility's "capital minimization" investment and operating strategy under rate suppression.

For example, while the average age of the Coal Conversion utility's plant under the capital attraction scenario is 23.3 years, under rate suppression, its average age of plant is 40.2 years, well beyond the estimated service life of most powerplants. Similarly, the average age of the Purchase/Coal utility's plant is 23.1 years under capital attraction versus 32.7 years under rate suppression. The incidence of plant breakdowns is expected to increase (and reliability is likely to decrease) with plant age as the plant approaches the end of its estimated service life.

Recent events in the electric utility industry have made it clear that the absense of CWIP will signficantly constrain the rate at which economically desirable new generating capacity is built in the future. Without CWIP, utilities will pursue strategies which minimize future capital investment and instead undertake various low-capital/high-operating-cost expedients in order to meet demand. These measures will eventually induce rate increases of subtantially greater magnitude than the near-term rate consequences of the CWIP.

To summarize, CWIP is expected to have a small effect on electricity prices (at most, raising rates by 2.27 percent in 1985, for example). At the same time, we expect CWIP to have a positive effect on the financial health of the industry. By itself, CWIP will not solve all the industry's problems; but it is a productive step in helping to assure that the industry can provide its customers adequate supplies of energy at reasonable prices.

TABLE 1

THE COSTS OF ALLOWING 50% CONSTRUCTION WORK IN PROGRESS (CWIP) IN RATE BASE

Representative Utility	NPV of Benefits to Ratepayers Under 50% CWIP Private Discount Rate (millions of dollars)	NPV of Benefits to Ratepayers Under 50% CWIP Social Discount Rate (millions of dollars)	Internal Rate of Return
Coal Conversion (1982-2000)	1,842	2,623	.49
Coal/Nuclear (1982-2005)	1,189	2,333	.23
Gas/Coal (1982-2009)	2,259	4,140	.33
Gas Displacement (1982-2001)	3,308	5,366	.38
Oil Displacement (1982-2000)	1,709	2,962	.25
Purchase/Coal (1982-2001)	573	910	.33

TABLE TWO: TWO ALTERNATIVE REGULATORY SCENARIOS AND SUPPLEMENTARY BASE CASE ASSUMPTIONS

	Capital Attraction Scenario	Rate Suppressive Scenario
Return on Common Equity	Equal to Estimated Market Cost of Capital	Equal to 300 basis points Below Market Cost of Capital
Interest costs	Standard and Poor's AAA	Standard & Poor's BBB

Base Case Assumptions Common to Both Scenarios

General Inflation Rate	Data Resources Inc. Winter 1981-82 cycle long forecast
Load Growth	Company supplied (see Table Four)
Real Fuel Price Escalation	2.0% oil and natural gas, 1% coal.
Bond Prices	Data Resources Inc. Winter 1981-82 cycle long forecast

TABLE 3 : CAPITAL EXPENDITURES AND EXPENSES FOR FUEL AND PURCHASED POWER UNDER ALTERNATIVE REGULATORY SCENARIOS

Representative Utility	CAPITAL ATTRACTION SCENARIO		RATE SUPPRESSIVE SCENARIO	
	Capital Expenditures (millions)	Fuel and Purchased Power Expenses (millions)	Capital Expenditures (millions)	Fuel and Purchased Power Expenses (millions)
Coal Conversion (1982-2000)	9,943	29,947	4,077	43,195
Coal/Nuclear (1982-2005)	40,581	110,360	23,927	139,437
Gas/Coal (1982-2009)	62,847	152,113	64,815	201,022
Gas Displacement (1982-2001)	30,497	107,801	8,916	133,591
Oil Displacement (1982-2000)	22,141	77,221	12,922	95,253
Purchase/Coal (1982-2001)	7,606	35,560	4,766	45,386

TABLE 4

NET PRESENT VALUE OF THE COSTS OF THE RATE SUPPRESIVE SCENARIO AND THE INTERNAL RATE OF RETURN

Representative Utility	Net Present Value of Ratepayer Costs at the Private Discount Rate* (millions)	Net Present Value of Ratepayer Costs at the Social Discount Rate** (millions)	Internal Rate of Return
Coal Conversion (1982-2000)	1,289	1,960	.40
Coal/Nuclear (1982-2005)	242	966	.16
Gas/Coal (1982-2009)	2,302	4,191	.36
Gas Displacement (1982-2001)	2,840	4,686	.38
Oil Displacement (1982-2000)	1,530	2,674	.20
Purchase/Coal (1982-2001)	607	925	.40

* Assumed equal to a 6% real return

** Assumed equal to a 3% real return

TABLE 5

THE RELIABILITY PENALTY AS MEASURED BY RESERVE MARGINS AND AVERAGE AGE OF PLANT

	Ordinary Reserve Margins in the Year 2000 Under Alternative Regulatory Scenarios		Average Age of Utility Plant in the Year 2000 Under Alternative Regulatory Scenarios (in years)	
Representative Utility	Capital Attraction	Rate Suppression	Capital Attraction	Rate Suppression
Coal Conversion (1952-2000)	27.4	23.0	23.3	40.2
Coal/Nuclear (1952-2005)	15.3	4.6	21.6	25.4
Gas/Coal (1952-2009)	23.1	9.6	15.7	17.0
Gas Displacement (1952-2001)	41.0	21.0	19.4	27.0
Oil Displacement (1952-2000)	NA*	NA*	NA*	NA*
Purchase/Coal (1952-2001)	12.0	12.0	23.1	32.7

*NA means not available.

Question 2: FERC Chairman O'Connor stated in his testimony that the principle difference between CWIP and AFUDC is with respect to the timing of cost recovery. Is it not true that over the life of a new facility AFUDC results in customers being charged more than they would have been charged under full or partial CWIP?

Answer 2: Yes, the actual level of charges, both discounted and undiscounted can be higher under an AFUDC policy than a full or partial CWIP policy.

According to a common, overly simple argument, whether the consumer is directly better off or worse off is a function of the difference between the consumer's discount rate and the rate at which the utility would accumulate capitalized interest if CWIP were not allowed in the rate base. There is much debate as to what consumer discount rate should be used in this calculation, recognizing that a high consumer discount rate and CWIP in rate base could cause economic loss for the consumer.

A single-asset model of a utility company can also obscure the fact that CWIP in the rate base of a fast growing utility which is continuously building new plants can have a different pattern of rate impacts depending on the rate of growth in the company's rate base. If the CWIP account grows fast enough through time, arguably CWIP could always cause electricity rates to be higher, even though on the individual assets it is still "pay me now or pay me later."

The argument that CWIP always causes rate increases is frequently rebutted with statistical evidence that utilities with CWIP in rate base enjoy a lower cost of capital, and thus their consumers enjoy lower rates.[1/]

In sum, the standard arguments over whether CWIP is good or bad for the consumer turns on one's assumptions about consumer discount rates, rate of growth in CWIP accounts through time, and the cost of capital penalty if CWIP is excluded from rate base.

But these standard quantitative arguments have tended to overlook a key factor which could swamp all other factors when evaluating CWIP from a consumer's point of view. This is the utility's supply-side response to CWIP policy. It is not reasonable to assume, as most analyses do, that a utility company will make the same supply-side responses regardless of their rate-regulatory treatment, and particularly their treatment on Construction Work In Progress.

The Department of Energy sponsored analysis as a part of the Electricity Policy Project that evaluated the consumer impacts of differing rate-regulatory policies. The analysis, conducted by Peter Navarro of the Harvard University Energy and Environmental Policy Center generally found that rate regulatory practices which were oriented toward positive financial incentives for incremental capital investment could substantially reduce electricity costs in the long term because the utility will not exhibit capital-averse behavior, and instead will undertake capital investment which minimizes production cost through time.[2/] Six utility companies were evaluated in this analysis. The internal rate of return to the consumer with regulatory policies that allowed 50% CWIP in the rate base, along with other "capital attraction" rate policies, ranged from a low of 23% to a high of 49%. (See Table 11, page 68 of Navarro report "Long Term Consumer Impacts of Electricity Rate Regulatory Policies." [copy attached]) These numbers compare very favorably when compared to any reasonable measure of a consumer discount rate. For example, installment debt (e.g. Master Card) is running at 18%. Thus inclusion of 50% CWIP as a part of a rate regulatory strategy which encourages utility companies to undertake necessary, cost-minimizing investment capital investment can have a profoundly positive impact on consumer rates through time.

The FERC rule on Construction Work In Progress is sensitive to the need to assure proper incentives for necessary capital investment in the long term. Only through such far-sighted regulatory policy can we expect the nation's electric power companies to continue to make the necessary capital investments to assure an adequate electricity supply at a reasonable cost in the long term.

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[1] For a thorough discussion of the various views of proponents and critics of CWIP. see Commission Order No. 298, Construction Work in Progress for Public Utilities, (Docket No. RM81-38), issued May 16, 1983. Also in our response to Question No. 4, we discuss at some length the affect of CWIP on the cost of capital and its consequent affect on consumer rates.

[2] See our response to Question No. 7 for a summary discussion of the downward-sloping production cost function experienced by companies and their customers in a cost-of-service regulatory environment.

Question 3: Does Order 298 change how FERC treats cancelled and abandoned facilities? Does Order 298 transfer any of the risk of plant cancellation from shareholders to ratepayers?

Answer 3: CWIP in rate base does not change the way in which FERC treats cancelled and abandoned facilities. Under an AFUDC policy, utility investors can recover from ratepayers capital and accrued AFUDC which had been prudently invested in plants abandoned prior to completion. The same general rule applies if CWIP is included in rate base -- that is, investors are allowed to recover prudently invested capital. Under Order 298, the prudence of all construction costs, including CWIP, must be demonstrated at the time the utility seeks to include these costs in rate base. The primary difference is that under a CWIP policy the carrying costs on the capital invested would have already been recovered prior to cancellation. Consequently after cancellation, the utility could only recover, through amortization, the principal amount of the investment.

Because the investor may recover all prudently incurred costs associated with an abandoned or cancelled plant under either an AFUDC or CWIP policy, Order 298 does not fundamentally change ratepayer risk.

Question 4: To what extent does CWIP in rate base reduce plant construction costs by increasing the constructing utility's bond ratings, thereby reducing its cost of borrowing? Please explain in detail using examples.

Answer 4: One of primary financial indicators used to determine electric utility bond ratings is the pre-tax interest coverage ratio. This ratio indicates the multiple by which interest expenses are "covered" by pre-tax income (eg. 2.5 to 1 etc.). The calculation for the ratio is as follows:

$$\text{Coverage ratio} = \frac{\text{Net Income}+\text{Interest expenses}-\text{AFDUC}+\text{Income Taxes}}{\text{Interest Expense}}$$

A company permitted full CWIP would have a zero AFDUC component in the calculation and consequently will have a higher coverage ratio than a company with no CWIP, all else being equal.

A recent study performed by ICF Incorporated noted that placing CWIP in rate base tends to increase a company's coverage ratio and bond rating.[1/] ICF illustrates their point by simulating alternately the effects of CWIP vs. no-CWIP on a utility building a 600 MW plant. Their projections show a distinct difference in the utility's coverage ratio which at its extreme is 1.75 (with CWIP a multiple of 3.75, without CWIP, 2.00).

Also included in the study are the 5 year average (1978-82) coverage ratios and their associated bond ratings. Using these statistics as a guide the difference in coverage ratios could have resulted in a AA (or better) rating for the CWIP scenario and a BAA rating for the same utility without CWIP.

Historically the yield differential between a BBB and AA bond has fluctuated considerably. In December of 1972 for example, the differential was just 35 basis points (7.74% for the former verses 7.39% for the latter). In December of 1982, on the other hand, the differential was 197 basis points (14.65% verses 12.68%).[2/] On a $1 billion investment (600 MW @ $1600/MW) this can mean a difference of $20 million annually in interest expenses.

There are additional effects from insufficient internal cash generation that most analyses tend to overlook. When cash can not be generated internally to meet construction needs, and when companies are constrained from raising new debt, (as they might be in the case above) they are forced to raise new equity with diluting effects on investor earnings. These effects will often induce management to delay or stretch out construction rather than seek new equity capital. Delays expose the project to construction cost escalation, and increased carrying charges.

Also, in instances where oil or gas are being displaced, consumers are forced to pay higher fuel charges than needed.

A good case in point is that of Northeast Utilities (NU) several years ago. Unable to obtain favorable rate decisions from the Connecticut Commission, NU elected to slow construction of Millstone 3. This 1150 megawatt nuclear plant, once on line, would have been able to economically displace about 7 million barrels of oil per year. As a result of the slower construction, however, consumers in Connecticut will end up paying more for the plant due to additional escalation in plant costs over and above general inflation, as well as accumulated interest costs, and will also have to wait longer for the benefits of reduced operating costs resulting from the plant displacing high cost oil generation.

A related example is that of Public Service of Colorado (PSC), Over the last decade PSC moved from being a net seller of electricity to a point where during its peak demand, it relies on purchased power for over 20 percent of customer needs. The cost of this power in 1982 ranged as high as 10 cents per kilowatt hour (kwh), which is almost twice the cost of power from new coal capacity which it had planned to build. Because of financial reasons however (traceable to regulatory rate suppression), PSC deferred plans to build that capacity and now via purchased power, its customers must incur a fuel penalty.[3/]

Additional examples could be cited, but the main point is that not only are short term borrowing costs lowered by policies which include CWIP in rate base, but time to completion can also be reduced which will add additional consumer savings.

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[1] ICF Incorporated, Financial and Electric Rate Impacts of Placing Construstion Work in Progress (CWIP) in Rate Base, prepared for the Edison Electric Institute, April 1984.

[2] Edison Electric Institute, Statistical Yearbook of the Electric Utility Industry/1982. p. 85.

[3] Peter Navarro, Long Term Consumer Impacts of Electricity Rate Regulatory Policies, January 1983. p. 33.

Question 5: Would a no-CWIP in rate base policy bias utility planning decisions against large scale, efficient bulk power facilities?

Answer 5: Yes. In todays's economic and regulatory environment, utilities are reluctant to pursue a more economic, capital-intensive investment and operating strategy even if they are "allowed" a market rate of return. In reality, most utilities have failed to actually earn their allowed rate of return for the past 10 years and the quality of these earnings has deteriorated as well.

Because of inflation and the soaring cost of building new powerplants, Construction Work in Progress has grown to be an increasingly large share of utility's total assets -- in some cases over 50%. Unless the utility earns a cash return on some of this CWIP (as opposed to the "paper earnings" of AFUDC), it will be unwilling to undertake that construction; the risk of being unable to finance such a large program from a relatively small asset base will become too high because of insufficient cash flow. CWIP in the rate base helps to assure that cash will be generated internally, with a consequent effect on financial costs, construction periods and fuel costs. All of these cost reductions translate into lower consumer rates.

Empirical studies show conclusively the detrimental financial effects on utilities who build. Bond ratings and market-to-book ratios deteriorate -- particularly in jurisdictions where rates are suppressed. Faced with the prospect of poor financial performance and no regulatory relief, utilities have and will continue to avoid investments, even when these investments are in the best interest of ratepayers.

Question 6: Does CWIP in rate base stimulate the construction of unneeded new facilities? How many facilities under construction today are for additional power capacity, and how many are replacements for over-aged or retiring facilities? If there were no commencement of new construction, how long would it be before electric shortages would begin to appear?

Answer 6: Rate regulatory policies such as CWIP which are oriented toward positive financial incentives for incremental capital investment can substantially reduce electricity costs in the long term because the utility will not exhibit capital-averse behavior, and instead will undertake capital investment which minimizes production cost through time. Evidence supporting this statement is presented in our responses to questions 1 and 2.

With respect to your other questions, as of the start of 1984, roughly 100 gigawatts of new electric generating capacity were under construction, including 33 gigawatts of coal-fired capacity and 59 gigawatts of nuclear capacity. There is great uncertainty concerning the pace of physical obsolescence of the existing generation stock. One recent Department study estimated that 50 gigawatts of new electric supply would be required through the end of the century to replace power plants which are retired, that 21 gigawatts would be needed to make up for deterioration in power plant performance due to aging, and further that between 19 and 57 gigawatts would be needed to replace capacity which is economically obsolete.

If electric demand growth through the end of the century is 3 percent per year, some 300 gigawatts of new supply will be required to meet expanded demand and some 100 gigawatts of new supply will be required to replace physically and economically obsolescent plant. Thus, in this case, some 400 gigawatts of new electric supply will be needed by 2000, of which only one-quarter will be provided by current construction.

If electric demand growth through the end of the century is 2 percent per year, roughly 160 gigawatts of new supply will be required to meet expanded demand and some 120 gigawatts of new supply will be required to replace physically and economically obsolescent plant. Thus, in this case, a total of roughly 280 gigawatts of new electric supply will be needed by 2000, of which roughly three-eighths will be provided by current construction.

If electric demand growth through the end of the century is 1 percent per year, roughly 40 gigawatts of new supply will be required to meet expanded demand and some 140 gigawatts of new supply will be required to replace physically and economically obsolescent plant. Thus, in this case, a total of roughly 180 gigawatts of new electric supply will be needed by 2000, of which less then three-fifths will be provided by current construction.

Without commencement of new construction, the reliability of electric service would start to be impaired by the late 1980s. Reliability problems would likely start in the central portion of the nation, where projected margins of electric generating capability over peak electric demand are slimmest. Even today, however, electric shortages are present in the sense that not enough economic generating capability is available to displace the costly production of electricity from oil and natural gas. Such uneconomic generation is prevalent in places such as New York, New England, California, Texas, and Florida.

Question 7: Should ratepayers begin to pay now for facilities they will not receive the benefit of until a later date?

a) Will this result in an intergenerational inequity?

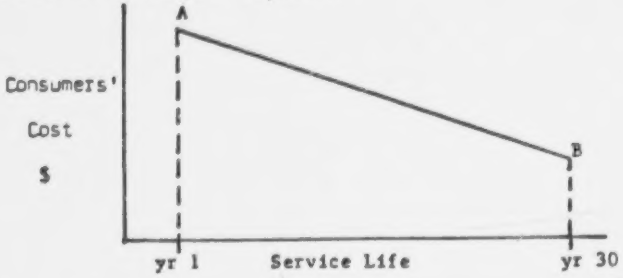
b) Will this be unfair to those who may move out of the utility's service area?

c) Is it appropriate to charge wholesale customers for the construction of new power generation facilities when they may be trying to build their own facilities?

Answer 7: The charge that CWIP results in intergenerational inequity implies that a gross mismatching occurs in the timing between the costs of construction and the benefits realized from construction. Indeed, current regulatory accounting practice, not CWIP, is the primary cause of whatever mismatching that does exist. These two points are explained further below.

First, by planning and constructing new facilities to meet customer requirements, utilities confer a present benefit on customers -- namely, the reasonable assurance of a continuing quality of service. Moreover, it is largely the increasing demands of existing ratepayers, rather than the obligation to provide service to new customers, that necessitates large construction programs. Not only are most ratepayers recognizable as customers of a specific utility for decades at a time, these customers also tend to make decisions (e.g. purchase long-lived electricity-using appliances) that presume a reliable, economical continuous and sufficient supply of electric power into the future.

Second, inclusion of CWIP is not the reason for whatever temporal mismatching occurs between the costs and benefits realized by customers. Instead, the reason for mismatching is the standard regulatory practice of using original cost accounting for electricity generating plants, which have long lifetimes. Indeed, if anything, CWIP smooths the long-term pattern of capital charges levied on consumers. Consider for example the sketch below which presents the pattern of capital charges to consumers, under original cost ratemaking for an asset with a 30-year booklife.



With or without CWIP, the direction (downward slope) of line AB does not change. Regardless of what numbers are used, the simple fact is that standard regulatory accounting practices cause ratepayers to pay substantially less for an asset in its twentieth year of service than during its first year. Thus, CWIP per se does not create the mismatch between the costs and benefits to consumers in varying time periods. To the extent inequity exists, it is mainly the result of ratemaking treatment based on traditional regulatory accounting principles.

As to the fairness of a CWIP policy to those who may move out of a utility's service area, we can present two arguments that favor CWIP. First, the balance of evidence presented during the lengthy study and comment period for Order 298 (issued May 16, 1983) prompted FERC to note that:

> "It is reasonable to presume that the chances are relatively great that, in this national community of ratepayers, the person funding CWIP in rate base would also benefit from the contributions of others -- no matter where or how often that person might change service areas."

Second some mismatching of costs and benefits will always occur due to population movement in any cost-of-service environment. For example, homeowners who pay public school and property taxes for system improvements do not always benefit directly from their expenditures (eg. they move or do not use public schools). Nor for that matter, can a precise matching of individual cost and benefits be done for special purpose funds such as the Federal Highway Trust Fund.[1/] In both of these cases, similar to CWIP, a public benefit is recognized which is considered to be more important than mere accounting precision.

In conclusion on this point, note that FERC considered in depth all of the arguments put forth on the questions of intergenerational equity. They concluded that some mismatching may occur but that the overriding issue is long-term economic efficiency. Their analysis is summed in the following quotation from FERC's Final Rule on CWIP (issued May 16, 1983):

> "The needs of the future must be met. These needs can to some extent be financed by the persons who will directly benefit, but such a nice alignment of benefit and burden is not always possible on the CWIP issue. Or to state the point more precisely, we have concluded that a rigid adherence to the cost responsibility principle on this issue would not be consistent with our responsibility to further the maintenance of an adequate and efficient electric utility industry."

With respect to the question regarding the appropriateness of charging wholesale customers CWIP charges, we note that few wholesale customers are currently building or planning to build sufficient capacity to eliminate their need for wholesale purchases. FERC, however, is sensitive to this potential problem and in its October 4 order on rehearing, determined that wholesale customers will be allowed "to escape liability for CWIP if they can prove that they bear no responsibility for the decision to build a new plant and will, in fact, purchase no full or partial firm power requirements which involve new plant."[2]

[1] The Highway Trust Fund, administered by the Department of Transportation, is funded by a 9¢/gallon gasoline exise tax. The proceeds are used to expand and improve the Federal Highway System. Because of the nature of the fund, a precise cost/benefit matching can not take place.

[2] "Construction Work in Progress for Public Utilities," Order on Rehearing, (Docket No. RM81-38), October 4, 1983, 48 Fed. Reg. 46012 (October 11, 1983)

Question 8: Does CWIP in rate base help send the appropriate price signals to customers?

Answer 8: We believe that CWIP in rate base sends a more appropriate price signal to consumers than does AFUDC. Rates that do not include CWIP do not reflect the cost of providing the next unit of electricity required to serve new demand. Consequently, without CWIP in rate base the consumer receives a price signal which may vary from the true cost to the utility of providing service.

Moreover, CWIP allows consumers to gradually adjust their consumption instead of confronting the "rate shock" associated with the addition of new plant to rate base.

Question 9:	Is CWIP in rate base incongruent with the general public policy of having customers begin to pay for facilities only when they become "used and useful"?

Answer 9: Legal arguments abound on both sides of the "used and useful" issue with each side claiming to support or deny the inclusion of CWIP in rate base as a sound regulatory practice. We noted in our response to Question No. 7, (Highway Trust Fund and school property taxes) two examples in the public sector where the concept of used and useful is overridden by larger public policy concerns. A related example from the private sector -- treatment of research and development (R&D) costs -- provides a useful analog in that expenditures for R&D are financed by current consumers (thorugh product prices) and investors (retained earnings); often with the direct benefits (improved products) not accuring for a decade or more.

Wisely, FERC, as well as a number of state commissions, has found that strict adherence to a concept which originated in the last century[1] is not necessarily the best method to ensure that the public interest is served. Indeed, an overriding principle of public policy should be considered in the context of setting regulatory policies and practices: namely, will the regulatory practice enhance or decrease the future likelihood of reliable and least cost energy? The Department believes that the problems of the electric utility industry are to a large degree a consequence of the way the industry is regulated. The solutions will, we believe, include changes in regulatory practices to accommodate the changing economic environment in which the industry must function. FERC Order 298 is a regulatory change which clearly responds to the changed economic environment and is a step toward ensuring reliable and least cost electricity.

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[1] See Smyth J. Ames, 169 U.S. 466 (1898)

It should be noted that those who believe sound regulatory practice should be based on the "used and useful" doctrine frequently claim that CWIP causes intergeneration inequity. We have presented our position on intergeneration equity in question number 7.

Question 10: Does Order 298 result in a price squeeze for wholesale purchasers of electricity who are in competition with other utilities?

Answer 10: Quite apart from CWIP, the potential for "price squeeze" is always a serious matter. However, there does not appear to be any general connection between CWIP and price squeeze, although it could arise in particular circumstances. Accordingly, we applaud the provisions in the FERC rule which allow for case by case consideration of price squeeze or undue price discrimination. If such abuses can be substantiated, FERC retains the ability to exclude CWIP in ratebase in particular cases. (See pp. 112-115 of the FERC final rule, Order 298, May 16, 1983.)

Question 11: Does Order 298 reduce the incentives for utilities to look at alternative forms of power generation: e.g., conservation; load management; cogeneration; increased use of interties and exchanges; and less capital intensive means of power production?

Answer 11: Order 298 does not reduce incentives for utilities to look at alternative forms of power generation. Indeed, the new rule increases FERC's ability to determine whether new central station projects are the least cost option. As justification for CWIP, the new FERC rule also requires the utility to describe its long-range program for providing reliable and economic power. This justification must include an assessment of the relative costs of adopting alternative strategies and an explanation of why the program adopted is prudent and consistent with a least-cost energy supply program.

Question 12: What impact would the three pending bills (S. 817, S. 1069, H.R. 555) have on:

a. electric rates (both wholesale and retail)

b. new facility construction costs;

c. the electric utility industry in terms of their:

  i) bond ratings;

  ii) interest rates;

  iii) stock value;

  iv) construction plans.

Answer 12: It is reasonable to contrast all three of these bills against the new FERC rule since all three bills generally restrict CWIP to very limited and specific circumstances. H.R. 555 is theoretically the most reasonable of the three bills yet we believe H.R. 555 essentially would set regulation back to the point of the prior FERC rule on CWIP. We can thus assume that the maximum effect of the three bills is the difference between the old FERC rule and the new FERC rule.

We noted in question #1 the effect on national rates over the long-term (i.e.: 1.1 percent, 2.3 percent, .6 percent and .7 percent in 1983, 1985, 1990 and 1995 respectively.) We also noted that various assumptions used by EIA in their analysis tended to overstate the effect of the new FERC rule.

With respect to construction costs we noted, in Question 4 that carrying charges alone could be reduced by $20 million per year on a $1 billion investment as the result of 200 basis point drop in the cost of debt. One of the principal regulatory mechanisms that can be employed to raise internal cash generation and thus reduce construction period debt charges is CWIP.

Moreover, increased internal cash generation can reduce the frequency of external financing and possibly speed up construction. The consequent effect of shortened construction periods is lower real and inflation induced-capital charge increases.

With respect to various financial indices, a return to the former FERC rule would negate the expected improvements in bond ratings, lowered interest rates and improved stock values which we would expect from the new FERC rule. In question #4 we noted a specific example of how a no CWIP policy affected the financial viability of Northeast Utilities and how financial problems translate into increased consumer costs.

With respect to construction plans, we have frequently noted that financially constrained utilities delay, cancel or abandon construction of efficient and economic central station facilities -- all to the long term detriment of their consumers.[1] Evidence of this is mounting as more and more utilities are cancelling or deferring capacity that is generally accepted as needed, either to cover future loads or to displace high cost fuels. H.R. 555 essentially would continue the old FERC rule under which no utility was ever granted CWIP from the Commission. Such a policy calls for a continuation of outdated and shortsighted regulation that will in the end only harm the ratepayers it is trying to protect.

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[1] Los Alamos National Laboratory (LANL), The Economics of Utility Oil and Gas Substitution: National and Region-Specific Analysis, (February 1983).

Department of Energy
Washington, D.C. 20585

June 29, 1984

Honorable J. Bennett Johnston
United States Senate
Washington, D.C. 20510

Dear Senator Johnston:

On April 12, 1984, Assistant Secretary Jan W. Mares appeared before the Energy and Natural Resources Subcommittee on Energy Regulation to discuss S. 817, S. 1069, and H.R. 555.

Following that hearing, you submited written questions for our response. Enclosed are answers to those questions with the exception of answers 11 and 22, submitted by minority members, which will be sent just as soon as they are completed.

If you have any questions, please call Cathy Carey or Tom Pretorius of my staff on 252-4277. They will be happy to assist you.

Sincerely,

for Thomas H Pretorius
Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosure

cc: Mr. Al Astrin

POST-HEARING QUESTIONS AND ANSWERS
from
Minority Members

Relating to the

APRIL 12, 1984, HEARING

Before the

SUBCOMMITTEE ON ENERGY REGULATION

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

WITNESS: JAN W. MARES

Question 1: Please provide the Committee with a summary discussion of the reasons you believe that the public interest is better served by implementation of the 1983 FERC construction-work-in-progress (CWIP) rule as opposed to the regulatory regime that existed prior to the rule.

Answer 1: The electric utility industry today finds it difficult to finance existing construction programs, even when the facilities would clearly reduce electric rates over the long term. Without CWIP in the rate base, the industry's financial incentives clearly point toward avoiding new construction, even though it will be needed to meet future demand growth and to replace physically and economically obsolete facilities. FERC's rule would provide a more positive set of investment incentives, so that a utility company undertaking the construction of a needed generation facility in the future would not have to court financial disaster in the process. The FERC rule will facilitate better investment decisions and a more economically efficient electricity supply system in the long term.

Generic solutions such as FERC's present rule are more appropriate than plant-by-plant or utility-by-utility decisions limited to crisis situations, which have failed in the past. The approach taken in the FERC rule is simple and certain, and avoids the regulatory maze proposed in H.R. 555. The predictability in the FERC approach will go a long way toward shoring up lost confidence by the financial community in the rate regulatory treatment to be accorded to electric utilities under FERC jurisdiction.

In the long term consumers and investors can prosper simultaneously only if we sponsor farsighted ratemaking policies today. The FERC rule is such a policy. It is a policy which is fundamental to our national energy policy goal of "an adequate supply of energy at reasonable costs."

Question 2: What percentage of electricity sales are covered by the FERC rule? If the full 6% per year rate increase were granted to all eligible applicants with ongoing construction programs, what would be the likely effect on retail electricity rates nationally?

Answer 2: Since the late 1970s, according to the Energy Information Administration (EIA), 15-18 percent of total megawatt-hours and 11-12 percent of revenues generated by investor-owned utilities have been under FERC jurisdiction.[1] (The revenue fraction is smaller than the megawatt-hour fraction because FERC regulates only wholesale transactions, and wholesale rates usually have a smaller fixed cost component than retail rates.)

As to your second question, FERC asked EIA to perform a study of the effects of the new CWIP rule on rates. The EIA study, published in March 1983, found that in terms of national averages, rates would rise by 1.1 percent in 1983, 2.3 percent in 1985, and then taper down to increases of 0.6 percent in 1990 and 0.7% in 1995.[2] Further, the 6 percent cap (on rate increases for any one utility) which became part of Order 298 was not modeled in the EIA study, so that the average increases projected by EIA are somewhat overstated.

Similarly, both EIA and FERC believe that over the long term CWIP-based rates will fall below non-CWIP-based rates, assuming the same rate of constructing new generation capability. When this crossover occurs is a function of the assumed rates of new construction, inflation, and interest. Specialists in financing for this industry are in general agreement that CWIP lowers financial costs for new construction projects. However, EIA did not attempt to model CWIP-induced reductions in financing costs in their study, and thus EIA's estimates are somewhat overstated for this reason also.

The most serious failing of the EIA study, however, was that utility supply efforts were held constant between the CWIP and non-CWIP scenarios. Recent events in the electric utility industry have made it plain that the absence of CWIP will significantly constrain the rate at which economically desirable new generating capacity is built in the future. Without CWIP, utilities are more likely to pursue strategies which minimize future capital investment and instead undertake various low-capital/high-operating-cost expedients in order to meet demand. These measures will eventually induce rate increases of substantially greater magnitude than the near term rate consequences of the various CWIP options.

In short, for the reasons stated, we believe the EIA estimates are the maximum increase which could result from the FERC, CWIP rule.

1/ EIA, Financial Statistics of Selected Electric Utilities, February 1984, p. 35.

2/ Ibid, Environmental Assessment Related to FERC Rule Amendment Regarding Inclusion of CWIP in Rate Base, March 1983, p. 4-7.

Question 3: How does the FERC rule provide for compensation for ratepayers who paid CWIP to a company that mismanaged a construction project into unwarranted cost overruns?

Answer 3: The standard notion that CWIP puts added risk on consumers is simply not supportable. The ability of the FERC to protect consumers from imprudently incurred investment is actually enhanced by the new CWIP rule, since it offers an opportunity for FERC review of the project during the construction phase.

The FERC rule does not change existing Federal and state procedures which provide safeguards for consumers from management imprudence. In fact, the Commission has the authority to disallow the recoupment in rates of higher costs incurred as a result of negligence, mismanagement or inefficiency. The new rule actually will enable the Commission to consider the prudence issue earlier in a construction program because of the newly requirement "Statement BM -- Construction Program Statement." "Statement BM" is a summary of data and supporting assumptions relating to the economics of any construction program which is used to determine whether the program adopted is prudent and consistent with a least-cost energy supply program.

Question 4:	Why should present consumers of electricity pay financing costs for a facility that is not yet used and useful? Doesn't this force present ratepayers to subsidize future ratepayers?
Answer 4:	Legal arguments abound on both sides of the "used and useful" issue, with each side claiming to support or deny the inclusion of CWIP in rate base as a sound regulatory practice. Wisely, FERC, as well as a number of state commissions, has found that strict adherence to a concept which originated in the last century[1] is not necessarily the best method to ensure that the public interest is served. Indeed, an overriding principle of public policy should be considered in the context of setting regulatory policies and practices: namely, will the regulatory practice enhance or decrease the future likelihood of reliable and least cost energy? The Department believes that many of the problems of the electric utility industry are a consequence of the way the industry is regulated. The solutions will, we believe, include changes in regulatory practices to accomodate the changing economic environment in which the industry must function. FERC Order 298 is a regulatory change which clearly responds to the changed economic environment and is a step toward ensuring reliable and least cost electricity.

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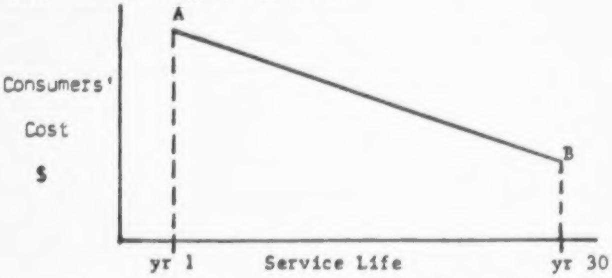
[1] See Smyth J. Ames, 169 U.S. 466 (1898)

The charge that CWIP results in intergenerational inequity implies that a gross temporal mismatching occurs between the costs of construction and the benefits realized from construction. However, most current customers whose costs are increased due to CWIP will benefit during the service life of the plant. Moreover, current regulatory accounting practice, not CWIP, is the primary cause of whatever mismatching that does exist. These two points are explained further below.

First, by planning and constructing new facilities to meet customer requirements, utilities confer a present benefit on customers -- namely, the reasonable assurance of a continuing quality of service. Moreover, it is largely the increasing demands of existing ratepayers, rather than the obligation to provide service to new customers, that necessitates large construction programs. Not only are most ratepayers recognizable as customers of a specific utility for decades at a time, these customers also tend to make decisions (e.g. purchase long-lived electricity-using appliances) that presume a reliable, continuous and sufficient supply of electric power into the future.

Second, inclusion of CWIP is not the primary reason for whatever temporal mismatching occurs between the costs and benefits realized by customers. Instead, the main reason for mismatching is the standard regulatory practice of using original cost accounting for electricity generating plants, which have long lifetimes. Indeed, if anything, CWIP smooths the long-term pattern of capital charges levied on consumers. Consider for example the sketch below which presents the pattern of capital charges to consumers, under original cost ratemaking for an asset with a 30-year booklife.



With or without CWIP, the direction (downward slope) of line AB does not change. It is standard regulatory accounting practices which cause ratepayers to pay substantially less for an asset in its twentieth year of service than during its first year. The simple fact is that CWIP per se does not create the mismatch between the costs and benefits to consumers in varying time periods. To the extent inequity exists, it is mainly the result of ratemaking treatment based on traditional regulatory accounting principles.

In conclusion, note that FERC considered in depth all of the arguments put forth on the questions of intergenerational equity. They concluded that some mismatching may occur but that the overriding issue is long-term economic efficiency. Their analysis is summed in the following quotation from FERC's Final Rule on CWIP (issued May 16, 1983):

> "The needs of the future must be met. These needs can to some extent be financed by the persons who will directly benefit, but such a nice alignment of benefit and burden is not always possible on the CWIP issue. Or to state the point more precisely, we have concluded that a rigid adherence to the cost responsibility principle on this issue would not be consistent with our responsibility to further the maintenance of an adequate and efficient electric utility industry."

Question 5: Please explain the origin of the concept of "allowance for funds used during construction" (AFUDC). When allowance for funds used during construction becomes a significant percentage of the net income of an electric utility, as was the case in the 1970's, what is happening? In 1980 AFUDC was 46% of net income. What is the figure for 1981, 1982 and 1983? Is the trend in the share of income provided by AFUDC a cause for concern? Explain.

Provide the Committee with estimates of the trend in the return earned by U.S. investor-owned electric utilities with and without the AFUDC component of income. Is this trend a cause for concern? Explain.

How does the 1983 FERC rule affect these trends?

Answer 5: Order No. 298 is the outgrowth of many years of policy development. Thirty years ago, charges for "interest during construction" were capitalized. However, this approach did not permit recovery of a utility's full carrying costs for new construction through subsequent depreciation charges, only the interest portion of the carrying costs of capital. Northern Natural Gas Company, 11 F.P.C. 123, 130 (1952). In the early 1970's, inflation, higher capital costs, and longer construction periods collectively began to adversely affect utility construction programs. In a series of orders, the Commission moved from the "interest during construction" concept to the use of an "Allowance for Funds Used During Construction" concept which permitted capitalization of a designated cost of equity as well as interest charges. In Public Service Company of Indiana, Inc., 56 F.P.C. 3003, Op. No. 783 (Nov. 10, 1976), the

Commission held that the accrual rate on the common equity component of AFUDC should be approximately equal to the level of a utility's cost of common equity. (See also, Order Nos. 561 and 561-A, 57 F.P.C. 608, reh'g denied, 59 F.P.C. 1340 (1977) governing the manner in which carrying charges are computed and AFUDC is added to the costs of plant). The Public Service Company of Indiana decision was issued contemporaneously with Order No. 555, the former FERC rule on CWIP.

These policy modifications reflect an evolving perception that earlier policies preventing or severely limiting the inclusion of CWIP in rate base were not working and that reconsideration and further action was needed. The Commission's effort to provide a sound and secure basis for financing new construction has resulted in promulgation of Order No. 298.

The financial effect of AFUDC is that it reduces the utilities "quality of earnings", (ie. cash component of earnings) which in turn reduces the utility's ability to internally service financial liabilities and pay a rate of return to investors. The effect becomes cyclical. Lack of internally generated funds forces the utility to seek additional external sources (ie. new debt and equity) very frequently at higher cost.

Higher financial cost means higher utility rates. Numerous empirical studies have found a significant differential in the cost of capital between utilities which is directly traceable to their earnings quality.[1/]

Actually AFUDC as a percentage of industry earnings in 1980 was 33.8 percent, and in 1981 and 1982 33.6 and 35.7 percent respectively. The 50 largest utilities, who sponsor the preponderance of the industry's construction, experienced AFUDC at 46 percent of net income in 1980. In 1981 and 1982 the AFUDC portion of earnings for these 50 companies was 47.3 percent and 49.9 percent respectively. These data are derived from Compustat, which does not yet have 1983 data. Given construction trends, however, AFUDC is likely to be over 50 percent in 1983. This data points out the serious quality of earnings problem for electric utilities today and why CWIP is so important from a financial perspective. From a consumer's viewpoint, these enormous amounts of AFUDC mean escalating interest costs, even in the absence of inflation, which will increase rates when these plants come on line.

Attached are two charts which provide authorized and earned returns, as well as the cash component of earnings for the 50 largest companies from 1967 to 1983. Chart 1 presents nominal rates, Chart 2 presents inflation-adjusted rates. Both charts show a growing cash earnings problem through time; a problem in fact that will not abate until either more widespread usage of CWIP occurs or more construction budgets decline.

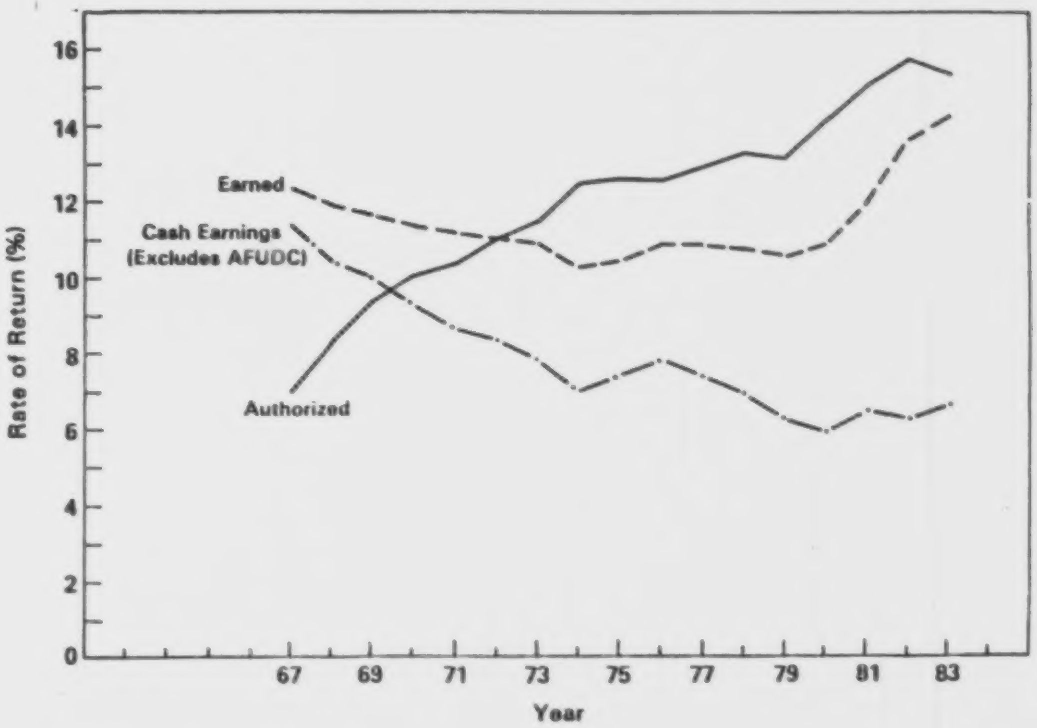
Current projections show aggregate construction budget declining for the electric power industry over the latter part of this decade. However, even at the relatively modest rates of demand growth which are currently being forecast, substantial levels of new capital investment will be required to meet demand growth and allow for replacement of physically and economically obsolete equipment. Regulatory policies on CWIP will in large part determine whether the industry will be willing and able to pursue this necessary capital investment. Failure to adopt regulatory practices which encourage necessary capital investment in the future will threaten the industry's ability to achieve our primary energy goal: "an adequate supply of [electric] energy at a reasonable cost."

[1/] For example see, ICF Incorporated, Financial and Electric Rate Impacts of Placing Construction Work in Progress (CWIP) in Rate Base, prepared for the Edison Electric Institute, April, 1984.

CHART 1

Nominal Rates of Return on Equity

Electric Utility Industry, 1967-1983

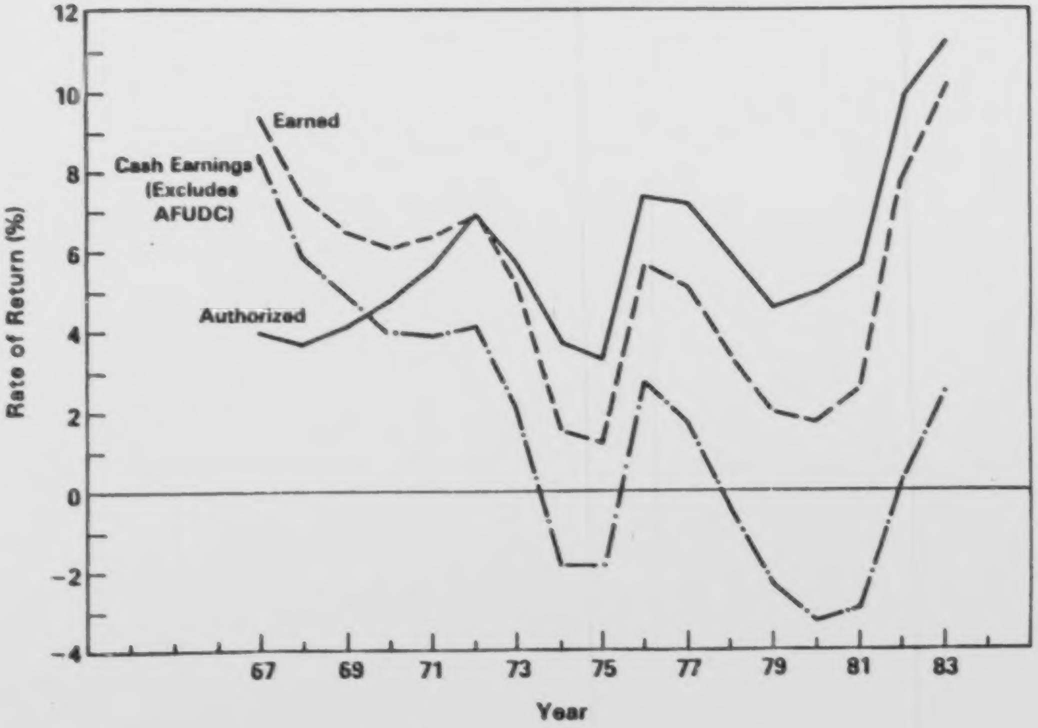


Source: Argus Research, EIA.

CHART 2

REAL RATES OF RETURN ON EQUITY, 1967-83

Electric Utility Industry



Source: Argus Research, EIA.

Question 6: The American Public Power Association's testimony at this hearing contends (pp. 5-6) that the financial health of the nation's investor-owned utilities has improved in recent years and is now quite good. Would you comment on that?

Answer 6: Utilities who have completed a construction program have experienced substantial improvement. Companies that are still burdened with substantial construction budgets however are, in general, not well. In our response to Question #5, we provided two charts which present nominal and real rates of return (authorized, earned, cash) for the 50 largest companies in the industry for the period 1967-1983. If we assume that the authorized rate of return is the market-required rate, it is easy to see that the industry has, for the last decade under-recovered returns to investors (earned). Recent trends show some improvement but earned returns are still below authorized levels.

If we then look at the cash component of these "earnings" (adjusted for AFUDC), the problem becomes clear. Building (and using an AFUDC policy) dilutes the industry's ability to pay its investors with cash that is internally generated. No other industry, regulated or unregulated, reports "earnings" that contain such a large non-cash component. Is it fair to say that an industry is financially healthy when it earns only 6 percent (cash, nominal dollars) when the market demands 15 percent? The industry has improved if you consider its cash earnings, adjusted for inflation, were negative from 1978 to 1982 (see chart 2).

The industry's financial health may continue to improve as construction budgets decline through most of this decade. But as long as demand growth is close to a 2 to 3 percent per year (average) expectation, and the industry seeks to improve its financial health by avoiding construction, the result can only be to increase long-term consumer costs and reduce the reliability of the electric system.

Whether or not the industry's financial health has improved is far less relevant than the effect of construction programs on a company's "health" and its ability to consequently build needed capacity. Research shows that an electric utility in a construction mode suffers severe financial penalties unless the regulatory environment responds by allowing for construction period cash needs.[1/] Many financially constrained utilities have cancelled, delayed or deferred construction that could be economic, once completed.

[1/] For example see, ICF Incorporated, Financial and Electric Rate Impacts of Placing Construction Work in Progress in Rate Base, prepared for the Edison Electric Institute, April 1984.

Question 7: What do you consider to be reliable projection of required additions to U.S. electric generation capacity for the U.S. in order to meed the demand for electricity in 1990? in 1995? in 2000? How much of this increase in capacity is represented by nuclear powerplants now under construction? Now in the planning stages? How much by coal-fired powerplants now under construction? Now in the planning stages? Show separately the effects of retiring existing plants, the increase in the intensity of electricity use in the U.S. energy consumption mix, and constant-intensity growth in demand.

Do you think historical practice in retiring plants will continue to apply? Why?

Do you think historical trends in the electricity intensity of energy consumption will continue? Why?

Answer 7: For ease of presentation we have divided our answer to this question into two parts. Part A discusses supply requirements; Part B discusses the effect of assumptions regarding electricity intensity.

Part A: Required Additions to Electric Supply and the Impacts of New Construction, Retirements, and Uneconomic Capacity

Reliable projections of required additions to U.S. electric generating capacity may be deduced from the Energy Information Administration's projections of electric energy requirements and the Department's projections of the physical and economic obsolescence of existing power plants.

EIA projects in its 1983 Annual Energy Outlook that the generation of electrical energy will increase as follows:

Year	Generation
1983	7.88 quadrillion Btu
1990	10.07 quadrillion Btu
1995	11.61 quadrillion Btu

EIA thus projects average growth in electric generation as follows:

Period	Growth Rate
1983-90	3.57 percent per year
1990-95	2.89 percent per year

If peak demand for electricity is assumed to grow at the same rate as EIA projects for electric generation, and if the rate of growth for the period from 1990 through 1995 is assumed to continue through 2000, then peak demand for electricity will increase as follows:

Year	Peak Demand (Projection)
1983	447.5 gigawatts
1990	571.9 gigawatts
1995	659.4 gigawatts
2000	760.2 gigawatts

Using the rule of thumb that reliable electric service requires a 20-percent reserve margin, or excess of generating capability over peak demand, requirements for generating capability will then increase as follows:

Year	Supply Required (Projection)
1983	537.0 gigawatts
1990	686.3 gigawatts
1995	791.2 gigawatts
2000	912.2 gigawatts

These projected requirements for generating capability may then be combined with projections of power plant retirements, power plant aging, and uneconomic generating capability to arrive at projections of required additions to electric generating capacity (all figures in gigawatts):

	1990	1995	2000
Projected Supply Required	686.3	791.2	912.2
Less: Existing Capability	592.7	592.7	592.7
Equals: Net Additions Required	93.5	198.5	319.5
Plus: Projected Retirements	7.0	13.1	47.9
Plus: Projected Aging	6.9	13.3	19.7
Plus: Projected Uneconomic	58.9	52.1	34.8
Equals: Gross Additions Required	166.3	277.0	421.9

The projections shown here for retirements, aging, and uneconomic capability are similar to those shown in Chapter 4 of the Department's report on The Future of Electric Power in America: Economic Supply for Economic Growth. The projection for retirements has been updated by the inclusion of utility data on planned retirements through 1992. The projection for aging has been updated to take account of aging which has occurred between 1981 and 1983. The projection for uneconomic capability has been adjusted to be consistent with the rates of demand growth projected by EIA.

The projection for retirements assumes that fossil-fueled power plants will have a lifetime of 45 years and nuclear power plants will have a lifetime of 35 years. This represents a continuation of the recent trend toward power plant refurbishment in lieu of retirement. This trend can be expected to continue in view of its obvious economic and financial advantages to utilities and their consumers.

Of the supply required, the amounts of coal-fired and nuclear capacity which are planned or under construction, according to utility data as of the start of 1984, are as follows:

Type of Capacity	Amount of Capacity
Coal Under Construction	32.7 gigawatts
Coal Planned, Not Under Construction	23.5 gigawatts
Nuclear Under Construction	58.9 gigawatts
Nuclear Planned, Not Under Construction	0.0 gigawatts

Part B: Impact of Assumptions About Intensity of Electricity Use

EIA projects in its 1983 Annual Energy Outlook that the gross national product will increase as follows:

Year	GNP, 1983 dollars
1983	$ 3,313 billion
1990	$ 4,169 billion
2000	$ 4,653 billion

EIA thus projects average economic growth as follows:

Period	Growth Rate
1983-90	3.34 percent per year
1990-95	2.22 percent per year

If the intensity of electricity use in the U.S. economy were to remain constant, electric generation would grow at the same rate as gross national product. Then, if peak demand for electricity were assumed to grow at the same rate as electric generation, and if the rate of economic growth for the period from 1990 through 1995 were assumed to continue through 2000, EIA projections of economic growth would imply a path of peak demand as follows:

Year	Peak Demand (Constant Intensity)
1983	447.5 gigawatts
1990	563.2 gigawatts
1995	628.5 gigawatts
2000	701.5 gigawatts

Assuming that reliable electric service requires a reserve margin of 20 percent, requirements for generating capability would then increase as follows:

Year	Supply Required (Constant Intensity)
1983	537.0 gigawatts
1990	675.8 gigawatts
1995	754.2 gigawatts
2000	841.8 gigawatts

The portion of electric supply requirements which is due to increasing intensity of electricity use may then be calculated as the difference between projected supply requirements (as calculated in Part A) and hypothetical supply requirements with a constant intensity of electricity use (figures in gigawatts):

	1990	1995	2000
Projected Supply Required	686.3	791.2	912.2
Less: Supply Required with Constant Ratio of Demand to GNP	675.8	754.2	841.8
Equals: Supply Requirements Due to Increasing Electric Intensity	10.5	37.0	70.4

These calculations indicate that increasing intensity of electricity use should account for no more than one-sixth of the gross additions to electric generating capacity which are likely to be required through the end of the century.

EIA's projections imply that electric demand and GNP will grow at roughly the same pace, as they have since the oil embargo of 1973. Specifically, they imply that the ratio of electric generation to GNP will grow only 0.2 percent per year through 1990 and 0.7 percent per year between 1990 and 1995. Such a continuation of historic trends appears likely barring major changes in consumption patterns or the relative prices of competing energy forms.

Question 8: What will be the principal effects of the FERC 1983 rule on plants now under construction? What will be the principal effects of this rule on plants in the planning stage for which construction has not been begun? To what extent will the rule encourage utilities to undertake new construction projects? How critical to the meeting of projected electricity demand is the continued implementation of the FERC rule? Please justify your answer.

Answer 8: The principal effect of the FERC rule on all plants in all stages of the construction cycle is that with CWIP, utilities are more likely to pursue strategies which do not minimize future capital investment but instead undertake various capital-intensive/low operating cost options as appropriate in assuming long term adequacy and efficiency in electricity supplies. These measures will eventually induce rate decreases of substantially greater magnitude than the near-term rate consequences of CWIP.

The FERC rule is very critical because its objective is consistent with one of the Administration's national energy policy goals; namely reliable electric energy provided at least cost to the consumer. Although the FERC rule is just one step toward dealing with the substantial disincentives for new capital investment which the electric power industry is facing, it is an important signal to the industry and the regulatory community.

The Department believes that many of the problems of the electric utility industry are primarily a consequence of the way the industry is regulated. The solutions will, we believe, include changes in regulatory practices to accommodate the changing economic environment in which the industry must function. FERC Order 298 is a regulatory change which clearly responds to the changed economic environment and is a step toward ensuring reliable and least cost electricity.

As justification we refer you to our response to question #10, wherein we present evidence that a policy of 50 percent CWIP actually lowers consumer cost on a net present value basis.

Question 9: Under the FERC 1983 rule, how is the burden of plant abandonment apportioned between ratepayers and shareholders when CWIP has been granted? In particular, what happens to the return already paid to the utility under CWIP if the plant is abandoned? Would the utility's new rates be designed so as to reimburse the ratepayers for the return paid previously, or would the ratepayers continue to be liable for the rate of return already paid? What is the effect of this rule on risk to ratepayers associated with abandonment?

Answer 9: CWIP in rate base does not change the way in which FERC treats cancelled and abandoned facilities. Under an AFUDC policy, utility investors can recover from ratepayers, capital and accrued AFUDC which had been prudently invested in plants abandoned prior to completion. The same general rule applies if CWIP is included in rate base -- that is, investors are allowed to recover prudently invested capital. The primary difference is that under a CWIP policy the carrying costs on the capital invested would have already been recovered prior to cancellation. Consequently after cancellation, the utility could only recover, through amortization, the principal amount of the investment.

Because the investor may recover all prudently incurred costs associated with an abandoned or cancelled plant under either an AFUDC or CWIP policy, Order 298 does not fundamentally change ratepayer risk.

Question 10:	What evidence would you recommend the Committee rely on in assessing whether application of the FERC rule will lower consumer costs? Please quantify this savings in a specific case, or, if this is not possible, in a hypothetical case of your own choice.
Answer 10:	As with any regulatory measure, CWIP should be evaluated by considering its effect on long-term consumer costs. We believe that the FERC rule will lower consumer costs by encouraging electric utility companies to pursue long-term cost minimizing capital investment programs.

In 1982, as part of the Electricity Policy Project, the Department asked researchers at the Energy and Environmental Policy Center at Harvard University to study CWIP in the context of various ratemaking methods available to regulatory commissions. The attached table presents the results of allowing 50 percent CWIP (state level) versus a policy of zero CWIP. Six actual utilities were chosen and collectively are representative in the sense that they reflect different combinations of conditions typical of the larger national industry. Columns 2 and 3 provide net present values using both a private (6 percent real) and social (3 percent real) discount rate. Column 4 provides the internal rates of return (IRR) to consumers from their investment in CWIP charges. We found it significant that for each utility, the IRR is considerably higher than any other reasonable investment opportunity a consumer is likely to face. This result clearly supports the argument that CWIP is a long-term net benefit to consumers.

THE COSTS OF ALLOWING 50% CONSTRUCTION WORK IN PROGRESS (CWIP) IN RATE BASE

Representative Utility	NPV of Benefits to Ratepayers Under 50% CWIP Private Discount Rate (millons of dollars)	NPV of Benefits to Ratepayers Under 50% CWIP Social Discount Rate (millions of dollars)	Internal Rate of Return
Coal Conversion (1962-2000)	1,842	2,623	.49
Coal/Nuclear (1952-2005)	1,189	2,313	.23
Gas/Coal (1962-2009)	2,259	4,140	.33
Gas Displacement (1962-2001)	3,308	5,366	.38
Oil Displacement (1952-2000)	1,709	2,962	.25
Purchase/Coal (1952-2001)	573	910	.33

Question 11: J. Bertram Solomon, a witness at the hearing, presented testimony to the effect that granting CWIP always increases the cost of electricity to ratepayers. Please comment on this assertion and on the Solomon analysis. A copy of this analysis is attached.

Answer 11: As we have demonstrated in our responses to other questions, Mr. Solomon's assertion is not correct. We will provide a detailed critique of Mr. Solomon's analysis.

Question 12: Please provide the Committee with a discussion of State law and regulation (on a state-by-state basis) as it affects CWIP in electric utility rates. Compare and contrast State regulation with the 1983 FERC rule. What are the principal differences between the approach the FERC has taken and the approach taken by the States that allow CWIP in electric utility rates? What evidence is there that differences between FERC treatment of CWIP and State treatment are leading, or could lead, to a "price squeeze" on certain utilities?

Answer 12: The attached table is from an Edison Electric Institute document which summarizes State Commission policies on CWIP in rate base (April, 1984). You will note that CWIP treatment varies considerably from State to State. For example, 27 States allow CWIP in rate base, 14 have sometimes allowed CWIP and 9 do not allow CWIP. Frequently a partial AFUDC offset is required which generally means that the cost of service would include a return on CWIP equal to the difference between the overall allowed rate of return on rate base and the AFUDC rate. If, for example, the allowed rate of return is 10 percent and the AFUDC rate is 7 percent, allowing CWIP in the rate base with an AFUDC offset would mean that rates reflect CWIP getting a 3 percent return. The remaining 7 percent would be capitalized on the company's books and reflected in rates during the plant's operating life.

To put this in better perspective EIA estimates that nationally in 1981, approximately 15.4 percent of CWIP was allowed in rate base by State regulatory commissions without an AFUDC offset and 12.5 percent with an AFUDC offset. Regional variation, however, is considerable.

The basis for State Commission authority to prescribe CWIP treatment also varies. In 34 States, the Commission has full authority to prescribe CWIP treatment; in 14 States, there is a statute which either prescribes a policy or limits Commission authority over treatment of CWIP. In two States, a court decision has set Commission policy or authority regarding CWIP.

Generally, the FERC 50 percent rule goes somewhat beyond most states in allowing CWIP to be included in rate base. In this regard, the FERC rulemaking is likely to set an important precedent for the states, signaling the need to adopt regulatory practices which will enable the industry to pursue necessary future investment. However, we know of no State which requires the utility to describe its long-range program for providing 'reliable and economic power, as FERC does. This justification must include an assessment of the relative costs of adopting alternative strategies and an explanation of why the program adopted is prudent and consistent with a least-cost energy program.

In New Hampshire, one of the States that has legislatively prohibited CWIP in rate base, the chief utility sponsor of the Seabrook project (Public Service of New Hampshire) is in very dire circumstances. This occurs despite general acknowledgment that the Seabrook 1 is needed.[1/] New Hampshire's ban on CWIP has contributed significantly to the utility's current financial difficulties.

Regarding the "price squeeze" question, quite apart from CWIP, the potential for price squeeze is always a serious matter. We are unaware of a general connection between CWIP and price squeeze, although it could possibly arise in particular circumstances. Accordingly, we applaud the provisions in the FERC rule which allow for case by case consideration of price squeeze or undue price discrimination. If such abuses can be substantiated, FERC retains the ability to exclude CWIP in ratebase in particular cases. (See pp. 112-115 of the FERC final rule, Order 298, May 16, 1983.)

[1/] In the last several months, a number of newspaper articles have quoted both utility company and public utility commission spokespersons as well as disinterested observers on the need for Seabrook 1. For example see, Boston Globe, 24 April 1984. p. 1.

cwip survey

State Commission Policy on CWIP in Rate Base

States that Allow CWIP in Rate Base (27)

Full CWIP (7)

Alabama +
Colorado +
Michigan +
Minnesota + +
South Carolina + +
Tennessee +
Virginia +

Partial CWIP (15)[1]

Arkansas + +
California
Connecticut
Delaware +
District of Columbia
Kansas
Montana
North Carolina
Ohio
Oklahoma + +
Pennsylvania
Texas
Utah
Vermont
West Virginia

Full or Partial CWIP (5)[1]

Florida
Kentucky + +
Louisiana +
Maryland + +
Wisconsin +

States That Have Allowed CWIP In Some Cases, Not In Others (14)

Arizona
Georgia + +
Hawaii
Idaho
Illinois +
Maine
Mississippi
Nevada + +
New Jersey + +
New Mexico + +
New York + +
North Dakota
Washington
Wyoming

States That Do Not Allow CWIP in Rate Base (9)

Alaska
Indiana
Iowa
Massachusetts
Missouri
New Hampshire
Oregon
Rhode Island
South Dakota

[1] Partial CWIP includes allowance of CWIP on pollution control and fuel conversion devices only.

+ These commissions require a full or partial AFUDC offset to CWIP included in rate base.

+ + These commissions have required some level of AFUDC offset in some cases.

Question 13: What analysis has been done of the impact of the 1983 FERC rule on the competitive balance among various types of utilities? Testimony of the American Public Power Association at the hearing identifies adverse competitive impact on more than 900 local publicly-owned utilities as a major defect in the 1983 FERC rule. Please comment.

Answer 13: Prior to issuance of the final CWIP rule, FERC studied the rule's likely effect on competitive balance among various types of utilities and found that the rule did not create price discrimination.[1/] As a result of this study and the lack of evidence submitted by commenters claiming price squeeze, the Commission found no reason to believe that the CWIP rule will cause price squeeze.

The American Public Power Association (APPA) has submitted no empiracle evidence in either their testimony or during the rulemaking's comment period that supports their contention regarding "adverse competitive impact on more than 900" publicly-owned utilities.

The Department of Energy supports a mixed electric power system in this country made up with strong and stable public and private systems. Such a system offers a measure of competition in an otherwise highly regulated environment, and also offers a measure of diversity which enhances the ability to service the needs of consumers with widely varying needs (e.g. urban vs. rural). We believe that with the mixed system that we have adopted in this country, it is fundamentally important that all the players are playing on a level field.

Quite apart from CWIP, the potential for competitive imbalance is a consideration. However, there does not appear to be any general connection between CWIP and the possibility of an imbalance, although it could arise in particular circumstances.

Accordingly, we applaud the provisions in the FERC rule which allow for case by case consideration of competitive problems. If such abuses can be substantiated, FERC retains the ability to exclude CWIP from ratebase in particular cases. (See pp. 112-115 of the FERC final rule, Order 298, May 16, 1983.)

1/ Federal Energy Regulatory Commission, Environmental Assessment Related to FERC Rule Amendment Regarding Inclusion of CWIP in Rate Base, (March 1983), p. 4-41.

Question 14: Inclusion of CWIP in an electric utility's rate base on a case-by-case basis could lead to a much more timely review by FERC of the prudence of construction expenditures. Explain, using specific examples, if possible, how this would happen under the FERC rule. Contrast this FERC rate treatment with the situation that prevailed prior to adoption of the 1983 rule. Testimony of the American Public Power Association (p. 6) contends that the FERC rule provides "blanket relief through virtually automatic allowance of CWIP." Please comment.

Answer 14: Per agreement with Committee staff, the Department defers its response to this question to the FERC.

Question 15: Please describe, using specific examples if possible, how the FERC rule operates to provide for the systematic assessment of least cost alternatives to conventional powerplant construction. What rights do intervenors have to contest a utility's analysis of alternatives? To what extent does the FERC staff challenge this analysis?

Answer 15: Per agreement with Committee staff, the Department defers its response to this question to the FERC.

Question 16: H.R. 555 provides for inclusion of CWIP in a utility's rate base if certain showings are made. Please provide the Committee with a "walk through" of the application of a utility for inclusion of CWIP in its rate base under H.R. 555. Use a specific application if possible. Compare this process with the process under the 1983 rule. For example, what are the differences with respect to evidence? Intervention? Other administrative procedures? Time to resolve the case?

What is the significance of the figure of 40 percent in H.R. 555 (internally generated funds/construction expenditures)? Does the choice of this figure appear to be based on accepted methods of assessing the financial health of an electric utility? Explain.

Answer 16: Per agreement with Committee staff, the Department defers its response to paragraph No.1 of this question to the FERC.

The 40 percent figure in HR 555 is a level of internally generated funds which the sponsors of the bill felt would assure a minimum level of financial integrity for the subject utility company. Unfortunately from Wall Street's point of view, 40 percent is an insufficient level of internal funds generation to warrent a AA bond rating. Indeed most analysts believe 50 percent is the minimum level necessary to judge an electric utility as financially sound.[1/]

DOE does not take issue so much with the level of internal generation built into HR 555 as it does with the basic concept of regulatory practices which are designed only to assure minimum levels of financial integrity. Such practices do not provide utility companies with positive incentives to pursue the substantial levels of capital investment which will assure a long term adequate supply of electricity at a reasonable cost.

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[1] Internal funds generation is only one of a number of criteria used to assess "financial integrity". As such internal funds generation can be thought of as a necessary but not sufficient condition for financial health. See for example, Paine Webber Mitchell Hutchins Inc., Investment Outlook June 1981.

Question 17: It is contended (Rep. Ottinger's statement, pp. 6-7) that the FERC rule provides an opportunity for utilities to "circumvent state regulation which presently sharply limits the inclusion of CWIP in retail rate bases". Please comment.

Answer 17: The Department believes that Representative Ottinger's concerns that utilities will try to form holding companies so as to be regarded as wholesalers (and thus be regulated by FERC) overlooks some important facts. First, state regulatory agencies have the means to prevent this from occurring. Second, both the Securities and Exchange Commission and FERC must review and approve any change of business form by an electric utility (e.g. forming a holding company). Nothing in the FERC order changes these procedures in any way.

Finally, an incentive to opt for FERC regulation already exists in that most utilities and investment houses regard FERC as well above average in terms of its overall regulatory practices. Yet, we have seen no rush by utilities toward business entities that would require increased FERC jurisdiction.

Question 18: Chairman O'Connor's testimony states (pp. 6-7) that, "The deterioration in investment quality of utility bonds necessarily meant that utilities would have to pay higher interest rates to attract capital in competition with other investment opportunities. As investment in utility stocks and bonds became less secure, utilities had to pay a premium to attract new sources of capital." Please provide appropriate data from the Commission's files to document both statements.

What is your best estimate of the interest rate penalty paid by a utility in securing financing if it is not allowd CWIP? That is, what interest rate could a utility expect to pay for a given project if it is financed with AFUDC as compared to the interest rate for the same utility for the same project if CWIP were allowed?

Answer 18: Per agreement with Committee staff, the Department defers its response to this question to the FERC.

Question 19: Using an actual case prior to adopting the 1983 CWIP rule, where CWIP was allowed under then applicable regulations for pollution control equipment or fuels conversion equipment, please provide the Committee with the actual rates charged by a utility installing such equipment and contrast those rates with the rates that would have been charged if the AFUDC method had been used.

Answer 19: Per agreement with Committee staff, the Department defers its response to this question to the FERC.

Question 20: Please provide the data and assumptions used in preparing Chart II and IIA appended to Chairman O'Connor's testimony.

Answer 20: Per agreement with Committee staff, the Department defers its response to this question to the FERC.

Question 21: Please provide the FERC's rationale in rejecting the use of a "financial difficulty" test before allowing CWIP.

Answer 21: As the FERC stated in its Order 298: "a financial distress test creates uncertainty in terms of the availability of relief. By attempting to discriminate among utilities, a financial distress test may not clearly signal when and where rate relief is likely. Since financial health is not easily restored to a company, it may not serve the public interest to withhold rate relief until after the financial condition of a utility has deteriorated."

FERC also noted that: "A policy that is reactive to financial difficulty is, therefore, flawed insofar as the available relief will likely be inadequate." (See pp. 121-122 of the FERC Order 298).

Under the previous FERC rule, a "financial difficulty" test did exist. Despite the fact that numerous utilities could have been considered to be in financial difficulty, few applied for relief and none that did apply were granted relief by the Commission.

Question 22: Assume that a utility whose sales are entirely wholesale sales in interstate commerce with a $10 billion rate base undertakes construction of a $2 billion powerplant, that construction takes seven years, and that the plant has a 20 year useful life. Assume further that interest rates during construction average 12%. (Please specify whatever additional assumptions about fuel prices are necessary to use in order to answer the hypothetical questions posed.) What would happen to that utility's rates once the powerplant goes into service if AFUDC were used, as compared to the limited CWIP approved by the FERC? What would happen to that utility's rates if construction of the powerplant were to be abandoned after five years and $1.5 billion had been spent with AFUDC? What would happen under the same circumstances if the limited CWIP approved by the FERC had been allowed? Please explain in detail.

Answer 22: The Department of Energy is currently working on a detailed response to this question. The answer will be provided shortly under a separate cover.

Question 23: The 1983 rule has been challenged in court. What is the status of the case? When is the court likely to issue a decision? Please provide a brief explanation of the issues raised in the litigation.

Answer 23: Challenge to CWIP Rule

STATUS: In D.C. Circuit Court. All briefs filed. Oral argument Fall '84.

DECISION: Anticipated Spring '85.

ISSUES RAISED: Case brought by REA Co-operatives and Municipally-owned utilities. They allege that the rule's effect (allowing CWIP in rate base) has these allegedly-unlawful impacts upon them:

1) Forces them to raise the prices which they charge their retail customers. This renders them less able (or unable) to compete with investor-owned utilities (IOU) for retail customers. (This situation is referred to as "price squeeze");

2) Renders them less able (or unable) to carry out construction of facilities which they themselves would own. This, they allege, is an "anti-competitive impact which the Commission is legally obligated to consider and failed in this case to consider

DOE/PE/70106-1

Long Term Consumer Impacts of Electricity Rate Regulatory Policies

January 1983

Prepared for:
U.S. Department of Energy
Office of Policy, Planning and Analysis
Division of Electric Utility
Under Contract No. AM01-79PE70106

Department of Energy
Washington, D.C. 20585

July 25, 1984

Honorable Frank H. Murkowski
Chairman
Subcommittee on Energy Regulation
Committee on Energy and Natural Resources
United States Senate
Washington,D.C. 20510

Dear Mr. Chairman:

On April 12, 1984, Assistant Secretary Jan W. Mares appeared before the Energy and Natural Resources Subcommittee on Energy Regulation to discuss S. 817, S. 1069, and H.R. 555.

Following that hearing, you submitted written questions for our response. The majority of responses were sent back on June 29, 1984. The response to question 11 is enclosed. The response to question 22 will follow shortly.

If you have any questions, please call Cathy Carey or Tom Pretorius of my staff on 252-4277. They will be happy to assist you.

Sincerely,

Thomas H. Pretorius
for
Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosure

cc: Mr. Al Astrin

Question 11: J. Bertram Solomon, a witness at the hearing, presented testimony to the effect that granting CWIP always increases the cost of electricity to ratepayers. Please comment on this assertion and on the Solomon analysis. A copy of this analysis is attached.

Answer 11: Mr. Solomon's assertion that including CWIP in the rate base will always be more costly to consumers than using AFDUC is incorrect. Mr. Solomon attempts to simplify the CWIP/AFDUC controversy into an arithmetic problem. In the process however, Mr. Solomon loses sight of some fundamental facts which, when included, undercut his assertion.

Mr. Solomon is quite correct on two points: the time value of money should be included in the revenue requirements model so as to estimate the net present value associated with either CWIP or AFUDC and; only at the end of the period is the cumulative present value of the two approaches equivalent (assuming the AFUDC rate and corporate cost of capital rate are equal). The first point, (including the time value of money in the calculation) is a basic concept of both finance and economics; the second (equivalence between revenue streams in the final period) is, by definition, the result of a present value calculation. Neither of these points are controversial. Unfortunately, after making these two points, Mr. Solomon errs.

Mr. Solomon's first error is in assuming that the consumers' discount rate is equal to the utility's cost of capital. As Mr. Solomon would probably agree, at any consumer discount rate lower than the utility's cost of capital, equivalence in the cumulative present value of revenue requirements will occur earlier than the final period. Thus the cumulative present value of revenue requirements with CWIP in the rate base can be lower than for AFUDC from the consumers' perspective.

It should be pointed out that precisely estimating the rate-payers' discount rate is not a trivial task. If one accepts the implication in Mr. Solomon's testimony, however, that a bank savings account is a reasonable estimate of the customers' opportunity cost of capital, then a discount rate in the vicinity of 5% would appear reasonable (ignoring the income tax effect which would reduce the rate).1/

1/Numerous analysts use 3% to 5% as the most likely social/private rate of discount. See for example, Peter Navarro, Long Term Consumer Impacts of Electricity Rate Regulatory Policies, January 1983.

These arguments are summarized in the attached chart which compares the AFUDC case (no CWIP in the rate base) with 50% CWIP in the rate base assuming a 5% interest rate for ratepayers and a 10% cost of capital for utilities. As the chart shows, under these assumptions, there is a $100 million net advantage to the customer of having CWIP in the rate base. The chart also shows that the crossover point, where cumulative present values are equal, occurs at approximately year 10, rather than at the end of the plant's life.

Mr. Solomon's second error is in ignoring the fact that the present value of revenue requirements for a single asset represents only one dimension of the issue of AFDUC vs. CWIP in rate base for both the utility and the consumer. There are other considerations such as the potential fuel penalty, cost of capital penalty and reliability penalty, which are borne by the consumer in the long run when rate suppressive methods such as AFUDC are employed by regulators.

The first of these, the fuel penalty, is equal to the net present value of the dollar savings foregone by a utility which fails to invest in the most economical generation mix; that is, the generation mix which would minimize revenue requirements for the electricity supplied.

The second penalty imposed by rate suppressive regulation on electricity consumers is the cost of capital penalty; it is equal to the additional capital charges that a utility incurs because it is operating in a rate suppressive regulatory climate. According to a number of studies, investors appear to perceive an increase in risk with rate suppressive regulation.[2] This perception is reflected in the generally lower stock prices and bond ratings of utilities operating in the more unfavorable regulatory climates.

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[2] Examples of empirical studies which have examined the effect of CWIP in rate base on the costs of equity capital include the following works:

1. Brigham, Dr. Eugene F., "The Treatment of CWIP," Working Paper No. 3-80, University of Florida, Public Utility Research Center, July, 1980.

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5. ICF Incorporated, Financial and Electric Rate Impacts of Placing Construction Work in Progress (CWIP) in Rate Base, April, 1984.

The third penalty imposed by rate suppressive regulation on electricity consumers is the reliability penalty which is reflected both in an increase in the probability of an electricity supply interruption and actual brownouts or blackouts.

The reliabilty penalty is the most difficult of the regulatory penalties to measure because many of its effects are not necessarily reflected in rates. Rather, in this dimension, rate suppression primarily affects the quality of service and costs are correspondingly more diffuse -- though nonetheless real.

These penalties can be avoided, however, by implementing regulatory policies that provide incentives to electric utilities to make economic, capital-intensive investments. CWIP is one such policy, since it helps increase cash flow during the construction period.

In summary we believe Mr. Solomon's simple arithmetic calculation is inaccurate and it fails to completely address all of the relevent facts which determine the consumer benefits of CWIP versus AFUDC.

Department of Energy
Washington, D.C. 20585

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Department of Energy
Washington, D.C. 20585

September 11, 1984

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Chairman
Subcommittee on Energy Regulation
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On April 12, 1984, Assistant Secretary Jan W. Mares appeared before the Energy and Natural Resources Subcommittee on Energy Regulation to discuss S. 817, S. 1069, and H.R. 555.

Following that hearing, you submitted written questions for our response. On June 29 and July 25 we sent you responses to those questions with the exception of question 22. Enclosed is the answer to question 22 which completes our response.

If you have any questions, please call Cathy Carey or Tom Pretorius of my staff on 252-4277. They will be happy to assist you.

Sincerely,

for Thomas H Pretorius
Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosure

cc: Mr. Al Astrin

Question 22: Assume that a utility whose sales are entirely wholesale sales in interstate commerce with a $10 billion rate base undertakes construction of a $2 billion powerplant, that construction takes seven years, and that the plant has a 20 year useful life. Assume further that interest rates during construction average 12%. (Please specify whatever additional assumptions about fuel prices are necessary to use in order to answer the hypothetical questions posed). What would happen to that utility's rates once the powerplant goes into service if AFUDC were used, as compared to the limited CWIP approved by the FERC? What would happen to that utility's rates if construction of the powerplant were to be abandoned after five years and $1.5 billion had been spent with AFUDC? What would happen under the same circumstances if the limited CWIP approved by the FERC had been allowed? Please explain in detail.

Answer 22: In order to thoroughly address these questions, we used a utility system simulation model to analyze the effects of using CWIP and AFUDC, for both a powerplant put into service and one which is eventually cancelled. Where plant cancellations were involved, we looked at cases in which all sunk costs were recovered from consumers and cases in which no sunk costs were recovered. Finally, we examined all cases from the perspectives of consumers, utility stockholders, and utility creditors.

Before summarizing our results, we should note that the assumptions specified in the question are somewhat artificial. For example, both the seven-year construction period and the twenty-year useful life of the hypothetical plant are somewhat short. Moreover, only two investor-owned systems (Southern Company and American Electric Power) approach the size suggested in the question. Finally, the cost of capital (12 percent) would not remain the same whether CWIP or AFUDC is used; with CWIP it would be somewhat lower.

Perhaps most significant, however, is the fact that this example does not capture the disincentive that the omission of CWIP from the rate base gives to the utility company with respect to making needed new capital investments. It is inappropriate to assume that a utility will be willing to pursue similar supply-side strategies over the long term with or without construction-work-in-progress in rate base.

Setting aside these major concerns with this hypothetical case, we will report on our findings. The results of our analysis were obtained by analyzing six cases suggested by the question. Three of these cases assume 50 percent CWIP and alternatively assume that the $2 billion power plant goes on line (case 1); that the plant is abandoned, but the investment is recovered (case 2); and that the plant is abandoned but the investment is not recovered (case 3).

Cases 4, 5 and 6 assume no CWIP and alternatively assume that: the plant goes on line; that the plant is abandoned and investment recovered; and finally that the plant is abandoned with no recovery. All six cases also assume 2.5% load growth per annum. Consequently, additional plants are needed in future years.

The results these cases are summarized belowed from the perspectives of the three types of affected parties:

- Utility stockholder --assuming that AFUDC will ultimately be recovered through rates, the effect on the stockholder in terms of share values is not significantly influenced by the AFUDC vs. CWIP in rate base treatment.[2/]

[2/] Again, this assumes no difference in the cost of capital between the two regulatory approaches, and assumes that equity investors are indifferent between AFUDC and CWIP. These assumptions are inappropriate, as shown in ICF, Inc.'s analysis for the Edison Electric Institute. ICF found that without CWIP, a utility engaging in the construction of new capacity would find its bond offerings downgraded and would face higher financing costs for its construction program. In particular, ICF found that the present value of revenue requirements with CWIP is lower than without CWIP for all discount rates below about 15 percent. [See Financial and Electric Rate Impacts of Placing Construction Work In Progress In Rate Base (prepared for the Edison Electric Institute by ICF, Inc., April 1984), pp. 8-9.]

However, the stockholder will incur a permanent loss in value if the plant is abandoned, regardless of the degree of recovery allowed or whether AFDUC or CWIP is used. If no recovery is allowed, the loss in value is potentially quite severe.

- o Consumer -- the effect of CWIP in the rate base on the consumer varies over time and is generally small. Although shifting to CWIP would cause an immediate near-term increase in rates because the rate base would be increased, over the long term the average level of both the rate base and rates would be somewhat lower, because CWIP would enable the utility to obtain construction financing at lower rates. In comparison, the initial advantage of AFUDC to the consumer is offset by the subsequent major rate increases associated with the introduction of completed plants into the rate base. When plant abandonment occurs, there is also an increase in rates if full recovery is allowed. However, this increase would probably not be large, in comparison to that incurred when a new plant is introduced to the rate base. For example, with projected revenue requirements for this hypothetical utility in excess of $5 billion, the effect on rates of a 10-year amortization of the costs of an abandoned plant is relatively small. (If the utility was significantly smaller, the relative impact would be greater).

- Creditor -- Interest coverage ratios are projected to decline over time in all cases, but they drop faster and deeper in the AFUDC cases than in the CWIP scenarios. Despite the size and excellent initial financial condition of this hypothetical utility, the construction program needed to meet a modest 2.5 percent demand growth rate still results in financial deterioration, essentially because the company's internally generated funds are small in relation to the size of the construction program. In the AFUDC cases, interest coverage falls periodically to untenable levels. In the CWIP cases, the decline is less severe, and interest coverage tends to stabilize in a region which is low but not intolerable for the utility.

The attachment presents the approach and results of this analysis in greater detail.

Attachment

Methodology and Assumptions

A utility system simulation model was constructed to analyze the effects of 1) alternative regulatory treatments of CWIP vs. AFUDC, and; 2) the abandonment of a plant during construction with and without CWIP. The initial set of assumptions concerning the utility system and the abandoned plant are as follows:1/

- o Utility whose sales are entirely wholesale (interpreted to mean entire business is under the jurisdiction of FERC).
- o $10 billion in rate base.
- o $2 billion power plant construction project including interest during construction (AFUDC).
- o Seven-year construction profile.
- o 20-year operating life.
- o Interest rates during construction average 12% (assumed to be the utility's cost of capital.

Using data derived from a composite of the 13 largest electric utilities, the initial assumptions imply an electric utility system of 20,000 MWe with initial Kwh sales of 75,000 million.

It is important to note that the sheer size of the system makes the illustrative case somewhat unrealistic. Of the 13 largest utilities, only Tennessee Valley Authority (TVA), American Electric Power (AEP) and the Southern Company have system capacities approaching this size. (Both AEP and the Southern

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1/Each of these assumptions is included per request of Senator Johnston.

Company are holding companies which have several operating entities.) The results of the analysis nevertheless point up the difficult plight of those utility systems with construction programs which are unmatched with load growth and costs far in excess of original expectations.

In addition to the assumptions described above, it is also necessary to specify additional factors such as:

- o Initially, the utility is in excellent financial condition with coverage ratios approaching 4.0.
- o Demand will grow at a modest 2.5 percent per year from the year of abandonment forward (assumed to be 1984).
- o Initially, the utility has a substantial reserve margin (approximately .30) and relatively low system capacity factor (which translates into a relatively distant need for new plants).

The assessment of the effect of the alternative regulatory treatments of CWIP and of the plant abandonment are measured from three perspectives:

The Utility Stockholder

The utility stockholder is principally interested in capital gains associated with the appreciation in market price of stock holdings and the interim dividend payments. The financial simulation assumed a 1.0 market-to-book ratio* and a constant payout of 80 percent of earnings. Having made these two assumptions, the book value per share should represent a reasonable basis for comparing alternative regulatory and plant abandonment scenarios.

The Consumer

The consumer sees the effects of alternative regulatory treatments of CWIP and a plant abandonment in terms of the rates. As a surrogate to individual rate schedules, the average mills per kilowatthour revenue requirement is used.

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*If the market-to-book ratio was assumed to be less than 1.0, then every subsequent new issue of common stock would result in a dilution of value for existing stockholders.

In many instances, the alternative regulatory treatments can be simplified into a question of paying the utility now or paying the utility later. In the case of plant abandonment, however, there is an opportunity for regulators to shift costs away from the consumer to stockholders. Depending on the extent of the shift, the stockholders will experience a potentially significant loss in the value of their holdings while consumers are shielded from the total cost effects of a plant abandonment.

Creditor

The interest coverage ratio excluding AFUDC is used as an indication of the risk-of-default on debt obligations associated with the various regulatory decisions. The interest coverage ratio is selected because it represents the quantitative financial measure utility bond rating agencies most frequently cite. It is a primary measure of the company's ability to carry its debt load.

The following section discusses the results of the simulation. It is important to note that demand elasticity and cost-of-capital effects are not accounted for in this analysis. In both instances, the absence of these two considerations in the analysis tends to understate the negative effects of AFUDC. Incorporation of demand elasticities (both short and long term) would result in reduced demand in the AFUDC cases due to the ultimately higher price levels. Since greater financial risks are associated with AFUDC, in the AFUDC cases the cost of capital would actually be somewhat higher. However, due to the complexity of both of these factors, it was not possible to incorporate them into this simplified analysis.

RESULTS

For each of the interested parties (i.e., the stockholder, consumer and creditor), the effect of AFUDC vs. CWIP in rate base is discussed under three alternative futures. First, it is assumed that the plant in question is completed, in which case there is a direct comparison of the two regulatory treatments of CWIP. Second, it is assumed that the plant is abandoned and full recovery is allowed. The abandoned plant costs (net of tax savings) are assumed to be amortized over a 10-year period following abandonment. Third, it is assumed that the plant is abandoned but the utility is not allowed to recover any costs through its rates. The impact of the pre-abandonment regulatory treatment of CWIP is contrasted in each of the two abandonment futures.

Book Value Per Share (See Figure 1). The relative and absolute impact on the stockholder is not significantly influenced by the AFUDC vs. CWIP in rate base treatment. This assumes, of course, that the accumulated AFUDC will, in fact, be returned to the investor over the productive life of the plant. It also ignores, as previously mentioned, the potential cost-of-capital effect associated with AFUDC. If these effects were taken into consideration, the market-to-book ratio of 1.0 would certainly be drawn into question. Assuming that the dividend payments were held constant, the higher cost of capital associated with AFUDC could be expected to be translated into lower market values per share.

If the utility abandons the plant, there is an immediate reduction in shareholder values. The subsequent recovery of value is dependent upon the degree to which the net costs (after tax savings) are allowed to be recovered out of rates. Assuming the utility is allowed full recovery, the stockholder does not regain the lost value for many years. If the utility must begin another building program any time before the value is fully restored, the resulting additional dilution is such that even after 30 years the stockholder would not achieve the same level and rate of growth in value. This analysis indicates that regardless of the degree of recovery allowed, the stockholder will incur a permanent loss in value if the plant is abandoned although the amount of loss diminshes over long periods of time.

If the utility is not allowed any recovery of abandoned plant costs, then the injury to the stockholder is both permanent and quite severe. In the case of the hypothetical utility analyzed here, even after 30 years the book value per share has not returned to its original point. The stockholder is forced to absorb an approximate 15 percent permanent loss. The magnitude of this loss is a function of the size of the abandonment relative to the total assets of the firm.

Revenue Requirement in Mills per Kilowatthour. As one would expect, the revenue requirements of AFUDC are initially lower than with CWIP in rate base. Figure 2 provides a graphic illustration of this effect. It also points out that, even with a modest growth rate (2.5 percent per year after 1979), the revenue requirements cross back and forth as new construction programs are initiated and completed. However, the rate increases are smoothed out considerably in the case of CWIP in rate base. The consumer is confronted with several step increases of 14-16 percent in the cases of AFUDC (see Figure 3) which are only partially matched by CWIP in rate base (See Figure 4). The increases in rates would be almost completely smoothed out if 100 percent CWIP was allowed in rate base.

When one turns to the two abandonment futures, the crossing back and forth of revenue requirements continues. In fact, by 1993, (the year in which the next plant is brought into service), the revenue requirements associated with abandonment and zero recovery exceeds that of the status quo (i.e., finishing the original plant and placing it in rate base). (See Figure 3).

In no instance does the consumer experience a dramatic increase in rates such as those currently contemplated for LILCO (with Shoreham) or Public Service of New Hampshire (with Seabrook). The reason that dramatic increases in rates do not occur can be tied directly to the size of the enterprise. With revenues in excess of $5 billion per year in the late 1980s, the impact associated with abandonment and full recovery is relatively small.

Interest Coverage Ratios. Interest coverage ratios excluding AFUDC capture at least one dimension of the financial risk associated with utility operations. As was mentioned earlier, interest coverage ratios provide a measure of the company's ability to carry its debt load. Since electric utilities are highly leveraged with debt ratios* approaching or exceeding 50 percent, this tends to be an important measure of the overall credit-worthiness of the company. Coverage ratios are often cited by bond rating agencies as a principal concern leading to the reduction in a bond rating. AFUDC earnings are excluded in this analysis because they do not represent cash which can be utilized to meet the cash interest payments.

Several important observations can be drawn from the results of the analysis as projected by this measure:

The most apparent and perhaps unexpected result of the analyis is that regardless of the rate-making treatment of CWIP, the hypothetical utility experiences a generally deteriorating financial condition. This is somewhat surprising in that the utility is assumed to be quite large, has substantial initial excess capacity and experiences a relatively modest 2.5 percent growth in demand after 1983 (see Figure 5).

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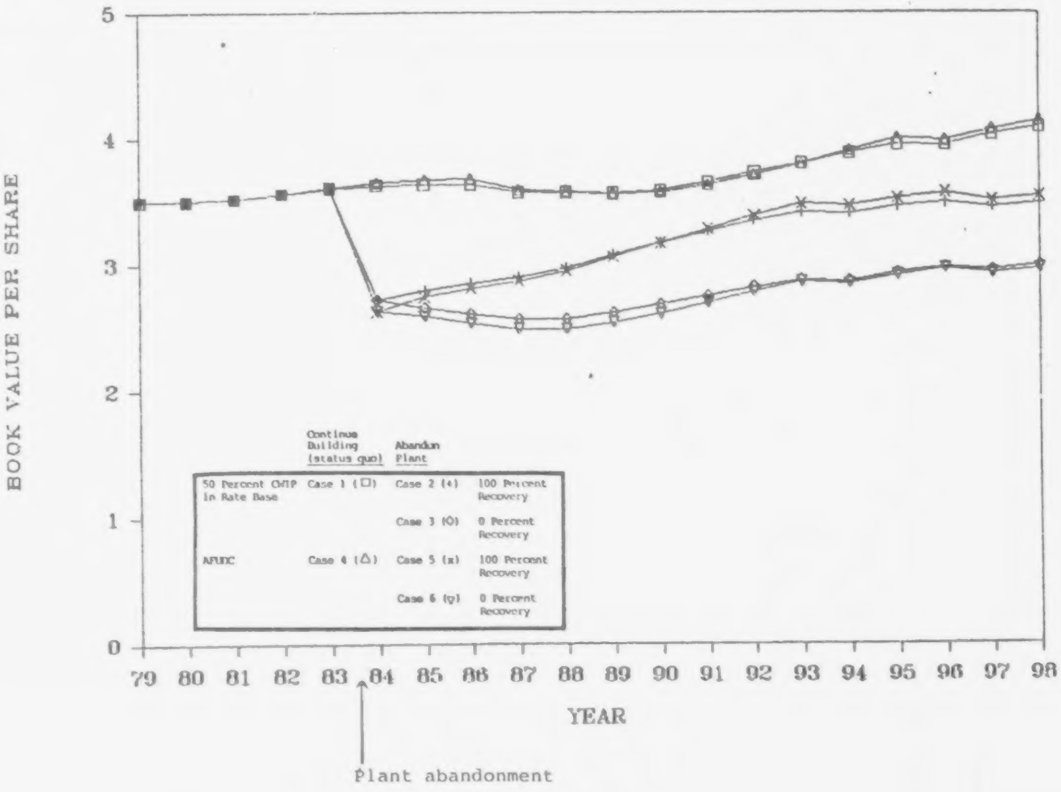
*Debt ratio is defined as the total of long and short term debt of a firm as a proportion to its total liabilities and stockholders equity (i.e., total debt divided by total assets).

The coverage ratio actually drops below 2.0 in 1994 and 1997 (right before new plant is placed in service) in the AFUDC case without plant abandonment (see Figure 6). This situation is only made worse in the two abandonment futures with coverage ratios dipping even lower. In the zero recovery case, coverage ratios are below 2.0 half the time, dipping to an unacceptable 1.65 in both 1992 and 1998. At these levels, it is questionable whether or not the utility could continue to fund any construction programs.

With 50 percent CWIP in rate base, the deterioration of the financial condition of the utility is somewhat slowed. (See Figure 7). Abandonment of the plant in 1984 does adversely impact the utility, resulting in coverage ratios which would likely result in at least one if not more downgradings of the utility's bond rating. The disastrous effects produced by AFUDC are not, however, reproduced. This suggests that CWIP in rate base at least partially shields the debt lenders from the risk of plant abandonment. These results are consistent with existing empirical studies which suggest that there is a correlation between utility interest coverage ratios, bond ratings and debt cost of capital.

FIGURE 1

COMPARATIVE BOOK VALUE PER SHARE



Plant abandonment

F I G U R E 2

COMPARATIVE MILLS PER KILOWATTHOUR

AFUDC vs CWIP IN RATE BASE

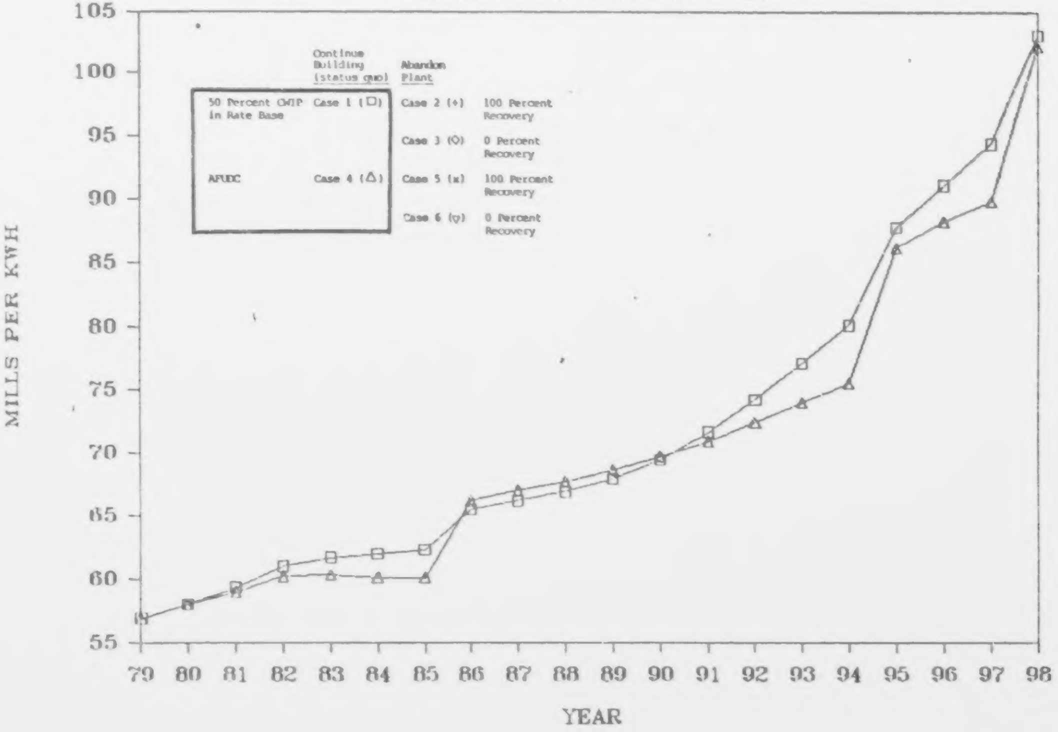


FIGURE 2

COMPARATIVE MILLS PER KILOWATTHOUR

AFUDC

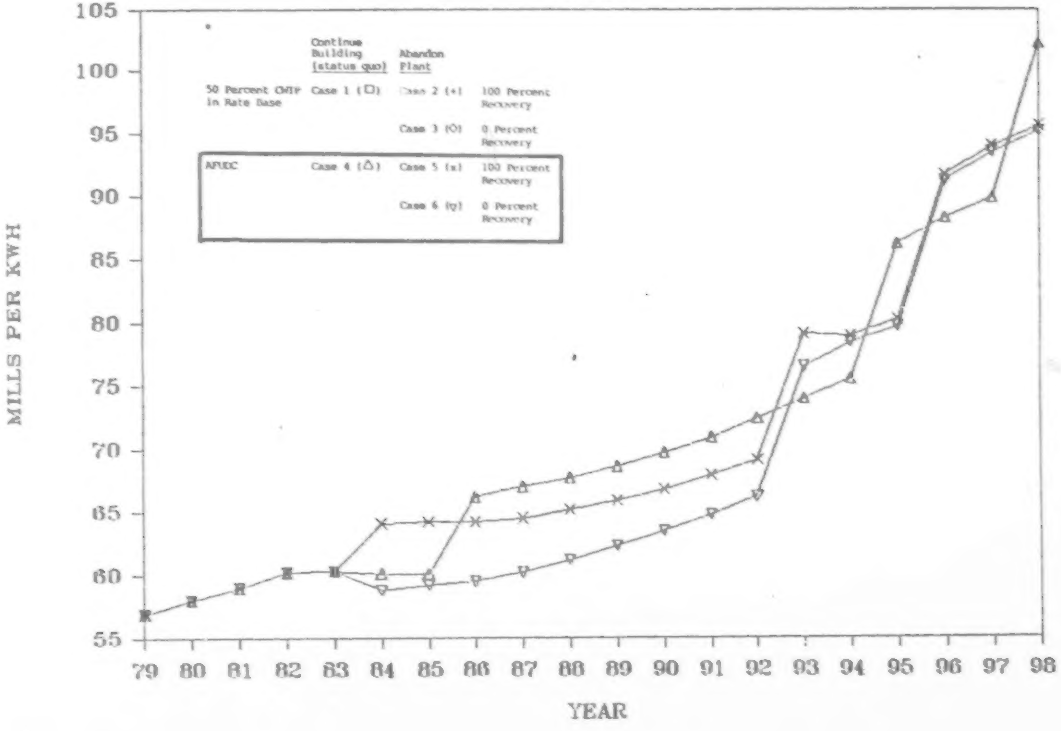


FIGURE 4

COMPARATIVE MILLS PER KILOWATTHOUR

FIFTY PERCENT CWIP IN RATE BASE

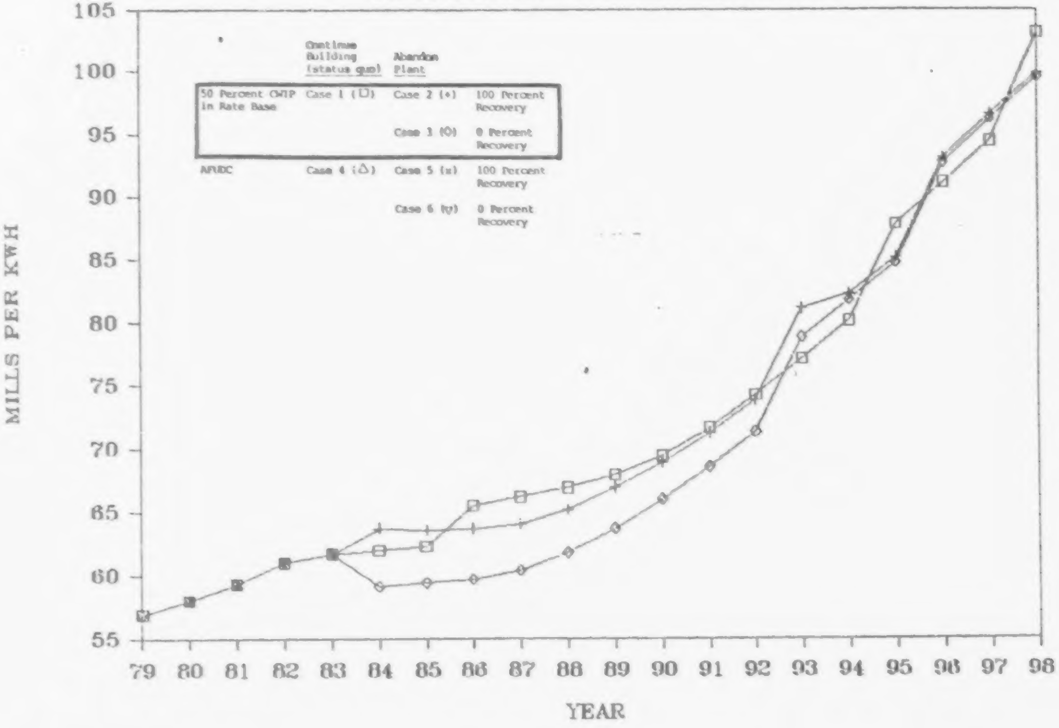


FIGURE 5

COMPARATIVE COVERAGE RATIOS

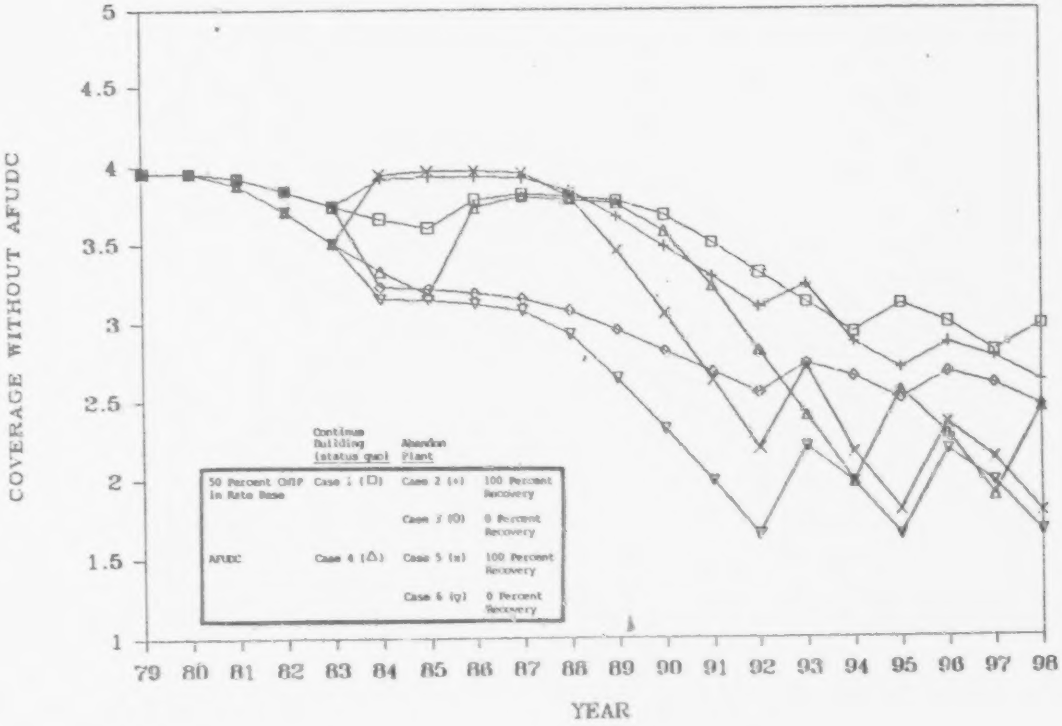


FIGURE 6

COMPARATIVE COVERAGE RATIOS

AFUDC

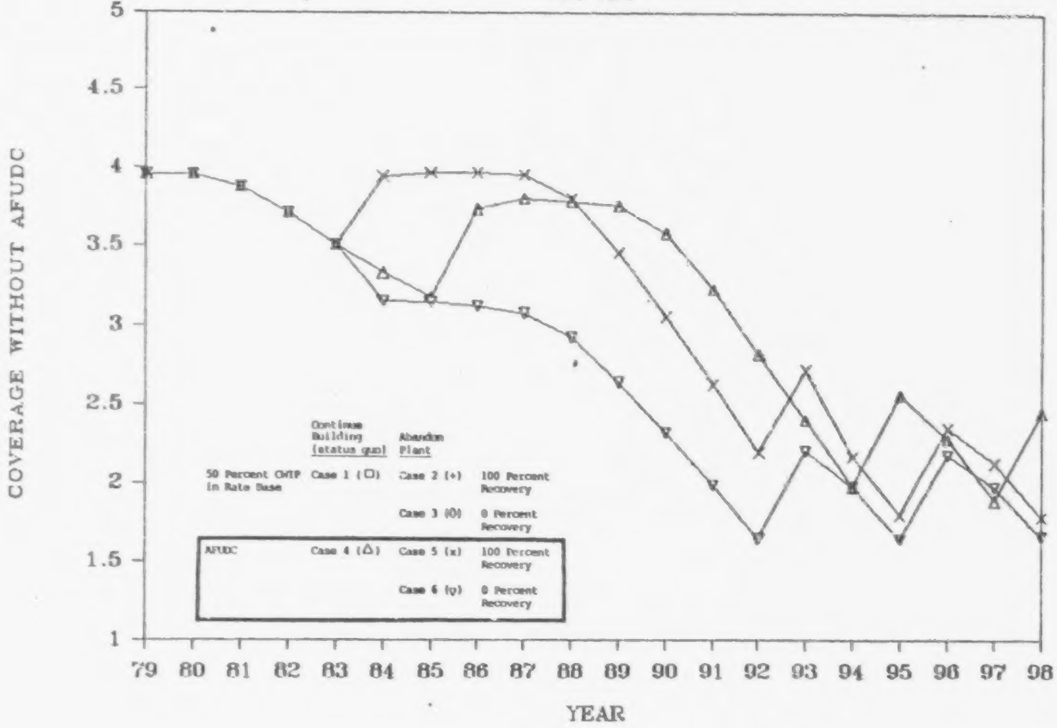
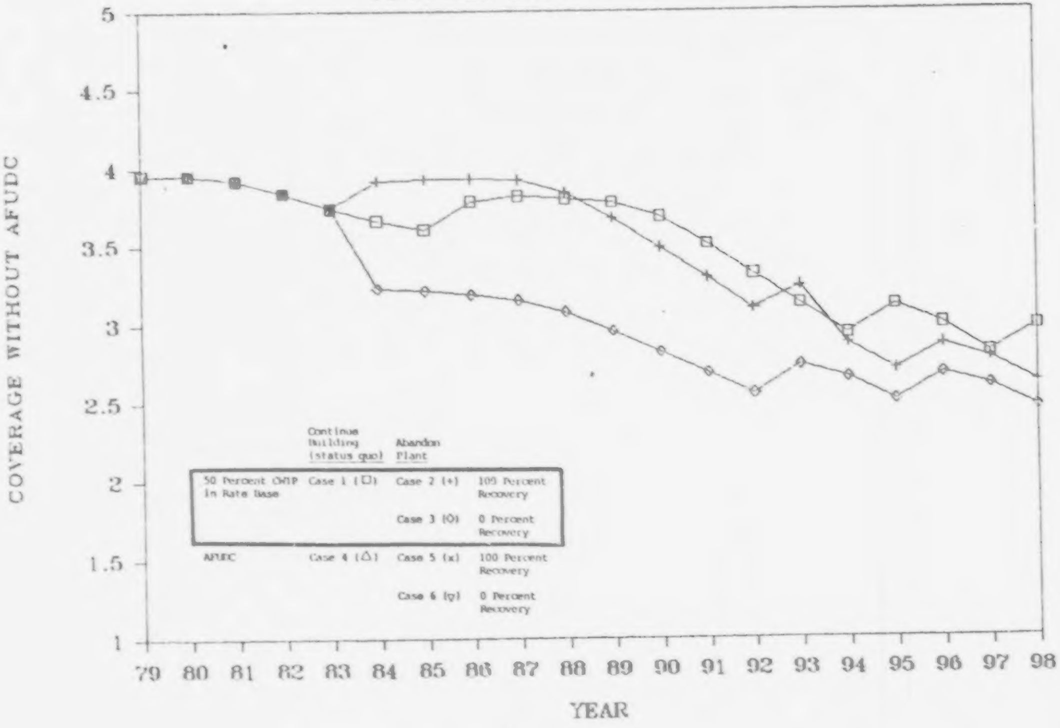


FIGURE 7

COMPARATIVE COVERAGE RATIOS

FIFTY PERCENT CWIP IN RATE BASE



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United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C. 20510

May 4, 1984

The Honorable Raymond J. O'Connor
Chairman
Federal Energy Regulatory Commission
825 North Capitol Street
Washington, D.C. 20426

Dear Mr. Chairman:

The attached questions are in follow-up to your appearance before the Energy Regulation Subcommittee's April 12, 1984, hearing on S. 817, S. 1069 and H.R. 555.

Please provide the Subcommittee with your responses to these questions by the close of business May 18, 1984.

Sincerely,

Frank H. Murkowski
Chairman

Enclosure
FHM:HU:bn

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QUESTIONS FROM VARIOUS REPUBLICAN MEMBERS OF THE SUBCOMMITTEE FOR FERC CHAIRMAN RAYMOND J. O'CONNOR

1) On page 1 of your written testimony you state that the principle difference between CWIP and AFUDC is with respect to the timing of cost recovery. Is it not true that over the life of a new facility AFUDC results in customers being charged more than they would have been charged under full or partial CWIP?

2) In your opinion, what impact would enactment of any of the three pending bills have on electric rates, long term electric supply and system reliability?

3) Would you please comment on the specific provisions of the pending legislation? For example, are they workable? Could FERC implement them in a timely manner? Would they lead to results that are in the public interest?

4) Does Order 298 change how FERC treats cancelled and abandoned facilities? Does Order 298 transfer any of the risk of plant cancellation from shareholders to ratepayers? Has the Commission ever denied passthrough of costs of cancelled or abandoned facilities?

5) Would you please detail state-by-state the impact Order 298 will have on rates under the assumption that all of the pending CWIP applications will be approved in full by the Commission?

6) Would you provide the Subcommitttee with a current list of those public utilities that are FERC jurisdictional and the amount and proportion of sales by each which is FERC jurisdictional?

Would you also provide the Subcommittee with a list of the amount of power sold in each State which is FERC jurisdictional?

7) How many public utilities applied to FERC (or FPC) for CWIP in rate base prior to Order 298? What was the basis for those applications? Which were granted?

8) Prior to Order 298, what was the Commission's policy with respect to the granting of CWIP in rate base for emergency financial relief? Did any public utilities make any applications on this basis? Were any of these applications granted?

9) To what extent does CWIP in rate base reduce plant construction costs by increasing the constructing utility's bond ratings, thereby reducing its cost of borrowing? Please explain in detail using examples.

10) Would a no-CWIP in rate base policy bias utility planning decisions against large scale, efficient bulk power facilities?

11) Does CWIP in rate base stimulate the construction of unneeded new facilities?

12) Why should ratepayers begin to pay now for facilities they will not receive the benefit of until a later date? Dosen't this result in an intergenerational inequity?

13) Why does CWIP in rate base help send the appropriate price signals to customers?

14) Is CWIP in rate base incongruent with the general public policy of having customers begin to pay for facilities only when they become "used and useful"?

15) Does Order 298 result in a price squeeze for wholesale purchasers of electricity who are in competition with other utilities?

16) Does Order 298 reduce the incentives for utilities to look at alternative forms of power generation: e.g., conservation; load management; cogeneration; increased use of interties and exchanges; and less capital intensive means of power production?

17) What impact would the three pending bills (S. 817; S. 1069; H.R. 555) have on:

    a) electric rates (both wholesale and retail);

    b) new facility construction costs;

    c) the electric utility industry in terms of their:

        i) bond ratings;

        ii) interest rates;

        iii) stock value;

        iv) construction plans.

18) Some have claimed that prior to Order 298, the FERC's experience with its CWIP policy was quite limited. They ask, how much insight into the industry's financial condition and the need for greater CWIP relief was gained by the FERC during this period? What is your response?

19) Some contend that the 50% CWIP inclusion rate established by FERC in Order 298 was not based on previous experience or on evidence presented during the rulemaking. What is your response?

Questions from Senator J. Bennett Johnston

Subcommittee on Energy Regulation
Hearing on S. 817, S. 1069 and H.R. 555
April 12, 1984

1. Please provide the Committee with a summary discussion of the reasons you believe that the public interest is better served by implementation of the 1983 FERC construction-work-in-progress (CWIP) rule as opposed to the regulatory regime that existed prior to the rule.

2. What percentage of electricity sales are covered by the FERC rule? If the full 6% per year rate increase were granted to all eligible applicants with ongoing construction programs, what would be the likely effect on retail electricity rates nationally?

3. How does the FERC rule provide for compensation for ratepayers who paid CWIP to a company that mismanaged a construction project into unwarranted cost overruns?

4. Why should present consumers of electricity pay financing costs for a facility that is not yet used and useful? Doesn't this force present ratepayers to subsidize future ratepayers?

5. Please explain the origin of the concept of "allowance for funds used during construction" (AFUDC). When allowance for funds used during construction becomes a significant percentage

of the net income of an electric utility, as was the case in the 1970's, what is happening? In 1980 AFUDC was 46% of net income. What is the figure for 1981, 1982 and 1983?. Is the trend in the share of income provided by AFUDC a cause for concern? Explain.

Provide the Committee with estimates of the trend in the return earned by U.S. investor-owned electric utilities with and without the AFUDC component of income. Is this trend a cause for concern? Explain.

How does the 1983 FERC rule affect these trends?

6. The American Public Power Association's testimony at this hearing contends (pp. 5-6) that the financial health of the nation's investor-owned utilities has improved in recent years and is now quite good. Would you comment on that?

7. What do you consider to be a reliable projection of required additions to U.S. electric generation capacity for the U. S. in order to meet the demand for electricity in 1990? in 1995? in 2000? How much of this increase in capacity is represented by nuclear powerplants now under construction? Now in the planning stages? How much by coal-fired powerplants now under construction? Now in the planning stages? Show separately the effects of retiring existing plants, the increase in the

intensity of electricity use in the U.S. energy consumption mix, and constant-intensity growth in demand.

Do you think historical practice in retiring plants will continue to apply? Why?

Do you think historical trends in the electricity intensity of energy consumption will continue? Why?

8. What will be the principal effects of the FERC 1983 rule on plants now under construction? What will be the principal effects of this rule on plants in the planning stage for which construction has not been begun? To what extent will the rule encourage utilities to undertake new construction projects? How critical to the meeting of projected electricity demand is the continued implementation of the FERC rule? Please justify your answer.

9. Under the FERC 1983 rule, how is the burden of plant abandonment apportioned between ratepayers and shareholders when CWIP has been granted? In particular, what happens to the return already paid to the utility under CWIP if the plant is abandoned? Would the utility's new rates be designed so as to reimburse the ratepayers for the return paid previously, or would the ratepayers continue to be liable for the rate of return already

paid? What is the effect of this rule on risk to ratepayers associated with abandonment?

10. What evidence would you recommend the Committee rely on in assessing whether application of the FERC rule will lower consumer costs? Please quantify this savings in a specific case, or, if this is not possible, in a hypothetical case of your own choice.

11. J. Bertram Solomon, a witness at the hearing, presented testimony to the effect that granting CWIP always increases the cost of electricity to ratepayers. Please comment on this assertion and on the Solomon analysis. A copy of this analysis is attached.

12. Please provide the Committee with a discussion of State law and regulation (on a state-by-state basis) as it affects CWIP in electric utility rates. Compare and contrast State regulation with the 1983 FERC rule. What are the principal differences between the approach the FERC has taken and the approach taken by the States that allow CWIP in electric utility rates? What evidence is there that differences between FERC treatment of CWIP and State treatment are leading, or could lead, to a "price squeeze" on certain utilities?

13. What analysis has been done of the impact of the 1983 FERC rule on the competitive balance among various types of utilities? Testimony of the American Public Power Association at the hearing identifies adverse competitive impact on more than 900 local publicly-owned utilities as a major defect in the 1983 FERC rule. Please comment.

14. Inclusion of CWIP in an electric utility's rate base on a case-by-case basis could lead to a much more timely review by FERC of the prudence of construction expenditures. Explain, using specific examples, if possible, how this would happen under the FERC rule. Contrast this FERC rate treatment with the situation that prevailed prior to adoption of the 1983 rule. . Testimony of the American Public Power Association (p. 6) contends that the FERC rule provides "blanket relief through virtually automatic allowance of CWIP". Please comment.

15. Please describe, using specific examples if possible, how the FERC rule operates to provide for the systematic assessment of least cost alternatives to conventional powerplant construction. What rights do intervenors have to contest a utility's analysis of alternatives? To what extent does the FERC staff challenge this analysis?

16. H.R. 555 provides for inclusion of CWIP in a utility's rate base if certain showings are made. Please provide the Committee with a "walk through" of the application of a utility for inclusion of CWIP in its rate base under H.R. 555. Use a specific application if possible. Compare this process with the process under the 1983 rule. For example, what are the differences with respect to evidence? Intervention? Other administrative procedures? Time to resolve the case?

What is the significance of the figure of 40 percent in H.R. 555 (internally generated funds/construction expenditures)? Does the choice of this figure appear to be based on accepted methods of assessing the financial health of an electric utility? Explain.

17. It is contended (Rep. Ottinger's statement, pp. 6-7) that the FERC rule provides an opportunity for utilities to "circumvent state regulation which presently sharply limits the inclusion of CWIP in retail rate bases". Please comment.

18. Chairman O'Connor's testimony states (pp. 6-7) that, "The deterioration in investment quality of utility bonds necessarily meant that utilties would have to pay higher interest rates to attract capital in competition with other investment opportunities. As investment in utility stocks and bonds became

less secure, utilities had to pay a premium to attract new sources of capital." Please provide appropriate data from the Commission's files to document both statements.

What is your best estimate of the interest rate penalty paid by a utility in securing financing if it is not allowed CWIP? That is, what interest rate could a utility expect to pay for a given project if it is financed with AFUDC as compared to the interest rate for the same utility for the same project if CWIP were allowed?

19. Using an actual case prior to adopting the 1983 CWIP rule, where CWIP was allowed under then applicable regulations for pollution control equipment or fuels conversion equipment, please provide the Committee with the actual rates charged by a utility installing such equipment and contrast those rates with the rates that would have been charged if the AFUDC method had been used.

20. Please provide the data and assumptions used in preparing Chart II and IIA appended to Chairman O'Connor's testimony.

21. Please provide the FERC's rationale in rejecting the use of a "financial difficulty" test before allowing CWIP.

22. Assume that a utility whose sales are entirely wholesale sales in interstate commerce with a $10 billion rate base undertakes construction of a $2 billion powerplant, that construction takes seven years, and that the plant has a 20 year useful life. Assume further that interest rates during construction average 12%. (Please specify whatever additional assumptions about fuel prices are necessary to use in order to answer the hypothetical questions posed.) What would happen to that utility's rates once the powerplant goes into service if AFUDC were used, as compared to the limited CWIP approved by the FERC? What would happen to that utility's rates if construction of the powerplant were to be abandoned after five years and $1.5 billion had been spent with AFUDC? What would happen under the same circumstances if the limited CWIP apoproved by the FERC had been allowed? Please explain in detail.

23. The 1983 rule has been challenged in court. What is the status of the case? When is the court likely to issue a decision? Please provide a brief explanation of the issues raised in the litigation.

Southern Engineering
Company of Georgia
1800 Peachtree St., N.W.
Atlanta, GA 30357-830
(404) 352-9200

Southern Engineering

April 23, 1984

Alex Radin, Executive Director
American Public Power Association
2301 M Street, N.W.
Washington, D.C. 20037

RE: Graphs Comparing the Present Value of the Cumulative Revenue Requirements (or Customer Costs) Under 50% versus 0% CWIP In Rate Base

Dear Alex:

During the presentation of my testimony before the Senate Subcommittee on Energy Regulation on April 12, Chairman Murkowski asked for a comparison of the cost to consumers of 50% of CWIP in rate base versus no CWIP in rate base. I am enclosing a graph labeled Exhibit C which shows this comparison. Just as I explained during my testimony, the lines showing the revenue requirements to be collected from consumers are closer together than those on my graph comparing 100% CWIP in rate versus no CWIP in rate base on a present value basis. However, as I also explained, just as with the 100% versus 0% case, the graph shows that including CWIP in rate base is more costly to consumers in each and every year of the construction period and the service life until the very last year, when they become equal. Thus, as with the 100% versus 0% case, a consumer would have to be served by the utility for the entire 37-year construction period/service life of the unit and the utility would have to refrain from building any additional facilities during that period for the consumer to even get to the breakeven point where including CWIP, or a portion of CWIP, in rate base cost him/her the same as not including CWIP in rate base.

I am also including Table 4 which shows the development of the revenue requirements under the inclusion of 50% of CWIP in rate base.

If you have any questions concerning my analysis, please give me a call.

Sincerely,

J. Bertram Solomon

J. Bertram Solomon, Manager
Economic & Regulatory Services

JBS/fc
Enclosures

STATEMENT OF J. BERTRAM SOLOMON
MANAGER, ECONOMIC & REGULATORY SERVICES
SOUTHERN ENGINEERING COMPANY
On
S. 817, S. 1069 AND H.R. 555
"CONSTRUCTION WORK IN PROGRESS POLICY ACT OF 1983"
BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
APRIL 12, 1984

My name is J. Bertram Solomon. I am manager of the Economic and Regulatory Services department of Southern Engineering Company, a full service financial, economic and engineering consulting firm. My particular area of specialty is electric utility ratemaking. I have provided expert ratemaking testimony before a number of state public utility commissions and before the Federal Energy Regulatory Commission (FERC). The areas of expert testimony I have presented include: the proper ratemaking treatment of accounting practices and the effects of appropriate alternative accounting methods on expenses, income taxes, revenues, rate base and cost of capital; proper methods of cost allocation, required rates of return and margin levels, proper methods of measuring working capital requirements, and rate design. I have also prepared and filed comments before the FERC in several generic rulemaking proceedings. Additionally, I have participated in preparing and

in rate base because they will gain hundreds of millions of dollars in increased rates from it. One of their primary arguments is that it is cheaper for the customers of the utilities if CWIP is included in rate base. This is definitely not the case. And it is this erroneous contention that I want to discuss with you today. The Edison Electric Institute (EEI), on behalf of its member investor-owned electric utilities, constructed a model for comparing the rates to consumers with CWIP included in rate base versus the cost to consumers with CWIP not included in rate base for use in its lobbying efforts when H.R. 555 was being considered by the House of Representatives. This model purportedly proved the utilities' contention that including CWIP in rate base was less costly to consumers. Indeed, EEI's model does make it appear that including CWIP in rate base is less costly; however, there is a very dramatic flaw in EEI's model. That flaw is that the model makes the assumption that money has no time value to the consumers of the utilities.

Obviously, this assumption is wrong. Almost every financial decision made in our economy today is based upon either an explicit or an implicit recognition of the time value of money. This is true from the most basic level of our economy, a single individual, to giant businesses such as General Motors, to the federal government. A rational person would not take his life savings down to the bank and say to the banker, "here are my life savings, keep them for me for a few years when I will be back to pick them up." Such a person would expect to be paid interest on his money while it was in the possession of the banker. A large corporation

customers over the entire construction and service periods under both alternative methods of treating CWIP. The two graphs are marked as Exhibit A and Exhibit B. The information from which the graphs were constructed is contained in the attached Tables 1 and 2. The nominal annual and cumulative revenue requirements were taken directly from the EEI handout. The present value of the annual and cumulative revenue requirements were developed by applying a 10% discount rate to EEI's nominal dollars. This discount rate assumes that the time value of money to the consumers is the same as the rate of return required by the utility.

The first graph, Exhibit A, reproduces EEI's handout. It shows that, in terms of nominal dollars, the utility's revenues to be recovered from its customers would be higher, under the inclusion of CWIP in rate base, during the seven year construction period, but would be lower during the remaining 30-year useful life of the facility during which it would be providing service than the revenues which would be collected if CWIP were not included in rate base. If CWIP is not included in rate base, there are no revenue collections from customers during the seven-year construction period. On the other hand, when CWIP is included in rate base, there are significant revenue collections from customers during the seven-year construction period; however, the revenue collections during the 30-year service life are shown to be smaller under the CWIP in rate base method. The total revenues collected under the CWIP in rate base method are $2,960,000,000 - $410,000,000 during the seven-year construction period and $2,550,000,000 during the 30-year service life. With CWIP not included in rate base, $3,794,500,000 in revenues would

under both methods would be the same. This means that for a consumer to just benefit equally from either method he would have to remain a customer of the utility for all of these 37 years. It also means that the utility serving this consumer would have to refrain from building any additional facilities because, if the utility did build additional facilities, the consumer's break even point would be pushed out even farther - to the end of the service life of the new facility.

There is only one conclusion which can be drawn from these graphs; i.e., that, when the time value of money to the customers of the utilities is taken into consideration, including CWIP in rate base will always be more costly to consumers than not including CWIP in the rate base.

EXHIBIT B

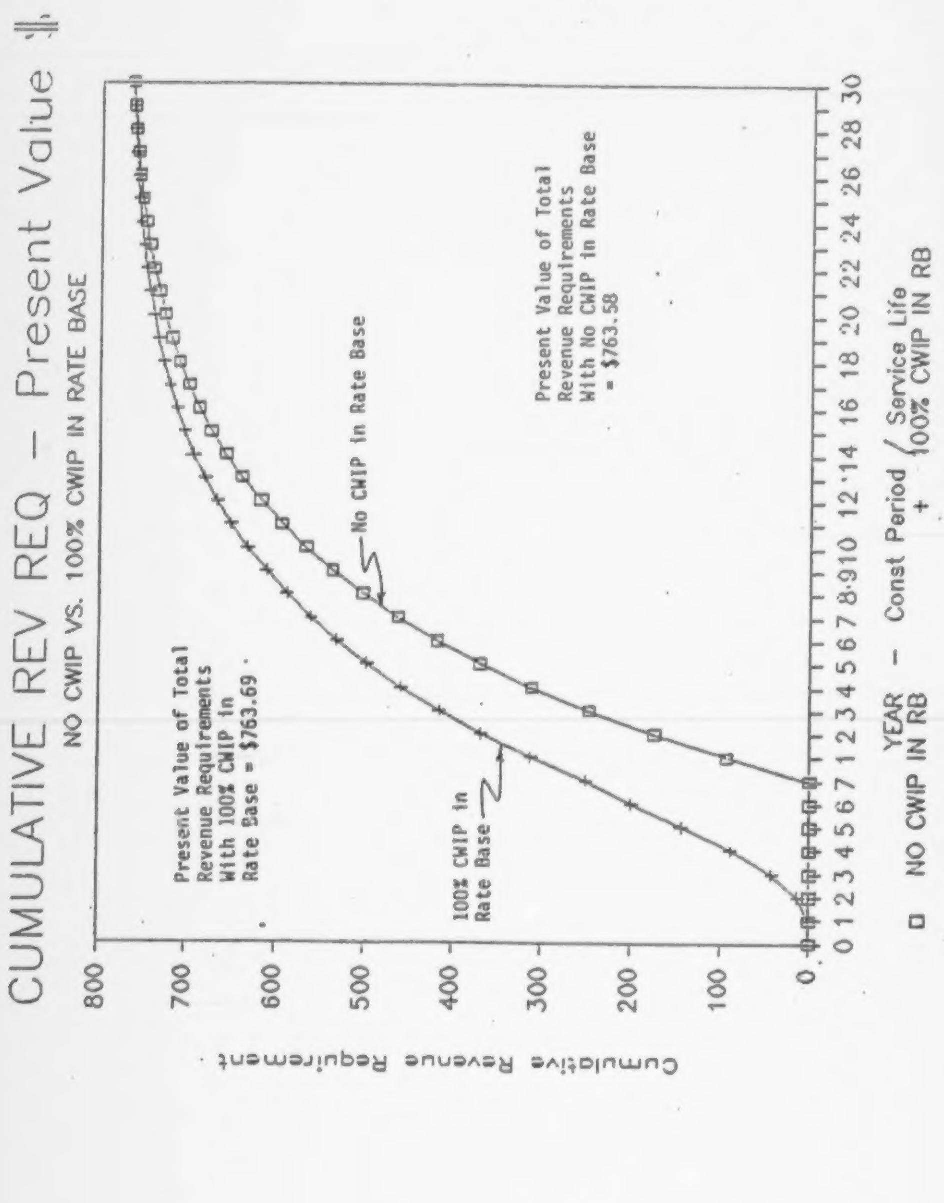
CUMULATIVE REV REQ - Present Value
NO CWIP VS. 100% CWIP IN RATE BASE
Cumulative Revenue Requirement
800
700
600
500
400
300
200
100
0
Present Value of Total Revenue Requirements With 100% CWIP in Rate Base = $763.69
100% CWIP in Rate Base
No CWIP in Rate Base
Present Value of Total Revenue Requirements With No CWIP in Rate Base = $763.58
0 1 2 3 4 5 6 7 1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30
YEAR - Const Period / Service Life
□ NO CWIP IN RB + 100% CWIP IN RB

TABLE 2

REBUTTAL TO EEI CWIP MODEL SOUTHERN ENGINEERING COMPANY

REVENUE REQUIREMENTS UNDER
NO CWIP IN RATE BASE; 10% RATE OF RETURN; 10% DISCOUNT RATE
(Dollars in Millions)

YEAR	CONSTRUCTION VS OPERATION PERIOD	ANNUAL REVENUE REQUIREMENT	CUMULATIVE REVENUE REQUIREMENT	PRESENT VALUE OF ANN REV RQRMT	CUME PRESENT VALUE OF ANN REV RQRMT
(a)	(b)	(c)	(d)	(e)	(f)
0	0			0.00	0.00
1	1	0	0	0.00	0.00
2	2	0	0	0.00	0.00
3	3	0	0	0.00	0.00
4	4	0	0	0.00	0.00
5	5	0	0	0.00	0.00
6	6	0	0	0.00	0.00
7	7	0	0	0.00	0.00
8	1	198.4	198.4	92.56	92.56
9	2	193.4	391.8	82.02	174.58
10	3	188.5	580.3	72.67	247.25
11	4	183.5	763.8	64.32	311.57
12	5	178.6	942.4	56.91	368.47
13	6	173.6	1,116.0	50.29	418.76
14	7	168.6	1,284.6	44.40	463.16
15	8	163.7	1,448.3	39.19	502.35
16	9	158.7	1,607.0	34.54	536.88
17	10	153.8	1,760.8	30.43	567.31
18	11	148.8	1,909.6	26.76	594.07
19	12	143.8	2,053.4	23.51	617.59
20	13	138.9	2,192.3	20.65	638.23
21	14	134.0	2,326.3	18.11	656.34
22	15	129.0	2,455.3	15.85	672.19
23	16	124.0	2,579.3	13.85	686.04
24	17	119.0	2,698.3	12.08	698.12
25	18	114.1	2,812.4	10.53	708.65
26	19	109.1	2,921.5	9.15	717.80
27	20	104.2	3,025.7	7.95	725.75
28	21	99.2	3,124.9	6.88	732.63
29	22	94.2	3,219.1	5.94	738.57
30	23	89.3	3,308.4	5.12	743.69
31	24	84.3	3,392.7	4.39	748.08
32	25	79.4	3,472.1	3.76	751.84
33	26	74.4	3,546.5	3.20	755.04
34	27	69.4	3,615.9	2.72	757.76
35	28	64.5	3,680.4	2.30	760.05
36	29	59.5	3,739.9	1.92	761.98
37	30	54.6	3,794.5	1.61	763.58
37	37	3,794.5	3,794.5	763.58	763.58

Note: Revenue requirements in columns C and D are from EEI handout

Exhibit C

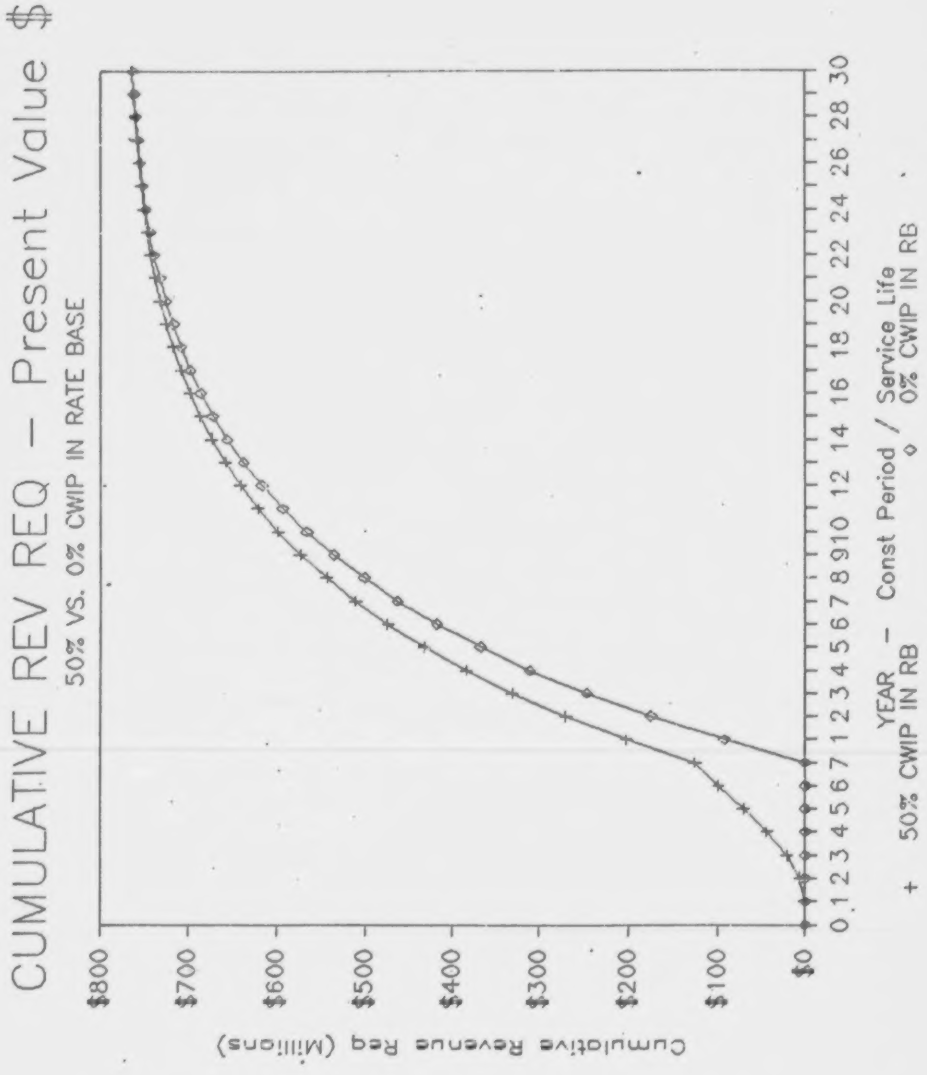
CUMULATIVE REV REQ - Present Value $
50% VS. 0% CWIP IN RATE BASE
Cumulative Revenue Req (Millions)
$800
$700
$600
$500
$400
$300
$200
$100
$0
0 1 2 3 4 5 6 7 1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30
YEAR - Const Period / Service Life
+ 50% CWIP IN RB
◇ 0% CWIP IN RB

Table 4

REVENUE REQUIREMENTS UNDER
50% OF CWIP IN RATE BASE; 10% RATE OF RETURN; 10% DISCOUNT RATE
(Dollars in Millions)

YEAR	CONSTRUCTION VS OPERATION PERIOD	ANNUAL CONSTRUCTION COSTS	CWIP BALANCE	AFUDC	RATE BASE	RETURN	DEPRECIATION	ANNUAL REVENUE REQUIREMENT	CUMULATIVE REVENUE REQUIREMENT	PRESENT VALUE OF ANN REV RQMT	CUME PRESENT VALUE OF ANN REV RQMT
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
0	0	0	0.0	0.0	0.0	0.0	0.0			0.00	0.00
1	1	10	10.0	0.5	5.0	0.5	0.0	0.5	0.5	0.45	0.45
2	2	120	130.5	6.6	65.0	6.5	0.0	6.5	7.0	5.37	5.83
3	3	250	397.1	20.2	195.0	19.5	0.0	19.5	26.5	14.65	20.48
4	4	300	717.3	37.2	345.0	34.5	0.0	34.5	61.0	23.56	44.04
5	5	200	954.5	58.9	445.0	44.5	0.0	44.5	105.5	27.63	71.67
6	6	100	1105.4	61.0	495.0	49.5	0.0	49.5	155.0	27.94	99.61
7	7	10	1176.5	67.6	500.0	50.0	0.0	50.0	205.0	25.66	125.27
8	1				1244.1	124.4	41.5	165.9	370.9	77.39	202.66
9	2				1202.6	120.3	41.5	161.7	532.6	68.59	271.25
10	3				1161.2	116.1	41.5	157.6	690.2	60.76	332.01
11	4				1119.7	112.0	41.5	153.4	843.6	53.78	385.79
12	5				1078.2	107.8	41.5	149.3	992.9	47.57	433.36
13	6				1036.8	103.7	41.5	145.1	1138.1	42.04	475.40
14	7				995.3	99.5	41.5	141.0	1279.1	37.13	512.53
15	8				953.8	95.4	41.5	136.9	1415.9	32.76	545.29
16	9				912.4	91.2	41.5	132.7	1548.6	28.88	574.17
17	10				870.9	87.1	41.5	128.6	1677.2	25.43	599.61
18	11				829.4	82.9	41.5	124.4	1801.6	22.38	621.98
19	12				787.9	78.8	41.5	120.3	1921.9	19.66	641.65
20	13				746.5	74.6	41.5	116.1	2038.0	17.26	658.91
21	14				705.0	70.5	41.5	112.0	2150.0	15.13	674.04
22	15				663.5	66.4	41.5	107.8	2257.8	13.25	687.28
23	16				622.1	62.2	41.5	103.7	2361.5	11.58	698.86
24	17				580.6	58.1	41.5	99.5	2461.0	10.10	708.97
25	18				539.1	53.9	41.5	95.4	2556.4	8.80	717.77
26	19				497.6	49.8	41.5	91.2	2647.6	7.66	725.43
27	20				456.2	45.6	41.5	87.1	2734.7	6.64	732.07
28	21				414.7	41.5	41.5	82.9	2817.6	5.75	737.82
29	22				373.2	37.3	41.5	78.8	2896.4	4.97	742.79
30	23				331.8	33.2	41.5	74.6	2971.1	4.28	747.06
31	24				290.3	29.0	41.5	70.5	3041.6	3.67	750.74
32	25				248.8	24.9	41.5	66.4	3107.9	3.14	753.88
33	26				207.4	20.7	41.5	62.2	3170.1	2.68	756.56
34	27				165.9	16.6	41.5	58.1	3228.2	2.27	758.83
35	28				124.4	12.4	41.5	53.9	3282.1	1.92	760.75
36	29				82.9	8.3	41.5	49.8	3331.9	1.61	762.36
37	30				41.5	4.1	41.5	45.6	3377.5	1.34	763.70
77	37	1000	1244.1	244.1	.0	2133.4	1244.1	3377.5	3377.5	763.70	763.70

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D. C. 20426

OFFICE OF THE CHAIRMAN

May 18, 1984

Honorable Frank H. Murkowski
Chairman, Subcommittee on Energy
  Regulation
Committee on Energy and Natural
  Resources
United States Senate
Washington, D. C. 20510

Dear Chairman Murkowski:

Enclosed are the responses to the questions transmitted by your letter of May 4, 1984, relating to the Subcommittee's hearing on Construction Work in Progress for Electric Utilities.

For the convenience of the Subcommittee members, the responses referring to questions submitted by the majority members begin with the prefix "I" and questions submitted by Senator Johnston begin with the prefix "II."

The issues raised by the pending legislation are complex and I applaud the time and effort which you have devoted to examining these issues. I hope that the enclosed responses prepared by the Commission staff will assist you and members of the Subcommittee.

Sincerely,

Raymond J. O'Connor

Raymond J. O'Connor
Chairman

Enclosure

QUESTIONS FROM VARIOUS REPUBLICAN SUBCOMMITTEE MEMBERS

Question I-1: On page 1 of your written testimony you state that the principal difference between CWIP and AFUDC is with respect to the timing of cost recovery. Is it not true that over the life of a new facility AFUDC results in customers being charged more than they would have been charged under full or partial CWIP?

Answer: In terms of nominal dollars, the AFUDC approach results in customers being charged considerably more over the life of a new facility than they would have been charged under full or partial CWIP. This is because the increased dollars paid during the construction period, when CWIP is allowed in rate base, are more than offset by the decreased dollars which will be paid over the facility's operating life, since the cost of that facility will not be inflated by accumulated AFUDC. Since the timing of cost recovery differs between the AFUDC and CWIP approaches, it may also be appropriate to evaluate the payments made by customers over the life of a new facility by discounting the nominal payments to present value. The response to Question Nos. II-11, II-20, and II-22a reflect such present value analyses.

Question I-2: In your opinion, what impact would enactment of any of the three pending bills have on electric rates, long term electric supply and system reliability?

Answer: The impact of the three pending bills on electric rates, long-term electric supply and system reliability will be affected by the extent to which such bills would encourage similar actions at the state level. Generally the impact of the three pending bills, if any is enacted, would be counter to the impact of Order No. 298. In the short term, enactment of any of the bills would generally reduce the rate of increase in current electric rates to approximately one in 13 retail consumers of electricity by less than 5% per year. While qualitatively the impact on long-term electric supply and system reliability can be said to be negative, quantitatively the impact will be virtually impossible to measure in view of the large number of other factors which influence utility planning decisions.

Question I-3: Would you please comment on the specific provisions of the pending legislation? For example, are they workable? Could FERC implement them in a timely manner? Would they lead to results that are in the public interest?

Answer: Following are comments on the three pending bills.

A. Comments on specific provisions:

H.R. 555

Generally speaking, H.R. 555 would reinstitute the financial condition of utilities as the eligibility test for CWIP in rate base, although it also requires that utilities demonstrate the need for a facility in terms of least system cost alternatives. The most important threshold criteria for CWIP are (1) that the utility be experiencing "severe financial difficulty," or (2) at least that the utility have revenues that amount to 40% or less of its construction costs in a test period. The 40% or less internal cash generation criterion also serves as a filing threshold for all utilities. The Commission's Office of Regulatory Analysis estimates that, only about 20 utilities would meet this criterion during the 1983 to 1985 period.

More specifically the Commission would be required to draft relatively elaborate regulations to implement H.R. 555. The statute's scheme is both complex and specific. It specifies a threshold requirement for filing (subsection 213(c)) which is different than the criteria for obtaining CWIP; the contents of CWIP a application (subsection 213(d)) based in part on the Commission's rule; the required hearing and burden of proof (subsection 213(e)); the alternative grounds for granting CWIP in rate base (subsections 213(f) and (g)); a series of limitations on the amount of CWIP that may be included (subsection (h)); and various other procedural provisions, including the "mirror-CWIP" provision of subsection 213(k). Following are comments on selected provisions.

Subsection 213(f) is designed to afford an expeditious decision on a CWIP-related rate increase for companies in financial trouble. If, pursuant to an application that contains a certification of "severe financial difficulty" and preliminary adjudicatory hearing on the issue, the Commission finds "severe financial difficulty," it must permit CWIP in rate base, subject to specific limitations. In addition, this provision requires that, if the finding of severe financial difficulty is later determined to have been unjustified, the Commission must order a refund of the CWIP-related rate increase, with interest, "to the persons on whose behalf such increases were paid."

The procedural requirements of this subsection suggest certain difficulties. The timing of rate increases could be a problem, particularly if the statute is interpreted to bar any CWIP-related increase, even if subject to refund under a Commission suspension order, until a hearing is held. Moreover, under current Commission policy, rate increases that are determined not to be excessive under the Commission's West Texas precedent would otherwise be eligible to take effect (subject to refund in many cases) as early as two months after a filing. Unless "severe financial difficulty" were determined to involve a relatively simple verification of financial statistics, it is unlikely that the Commission could complete the required "preliminary adjudicatory hearing" within two months or perhaps before the end of a suspension period. One possible solution would be to place a company's rate increase in effect in two stages, so as not to prejudice the company's rate filing solely on the basis of its application for financial relief through CWIP. Finally, the language of the refund provisions suggests that refunds be allocated somehow to the retail customers "on whose behalf" the wholesale customers paid CWIP increases. The procedural ramifications of this are unclear.

Under subsection 213(h), any CWIP that is permitted in rate base pursuant to the findings made under subsection (g) is limited by specified conditions. First, paragraph (1) limits the amount of CWIP included in rate base to that necessary to bring the utility to the 40% internal cash flow ratio with construction expenses. This limitation also applies to the inclusion of CWIP pursuant to a finding of "severe financial difficulty" under subsection (f). This limitation may not currently reflect the industry's average experience or a level of internal cash generation below which financial problems can be said to exist. It is a relatively rigid threshold, and its impact is difficult to predict for particular companies.

Second, imprudently-incurred costs are prohibited from rate base only when CWIP is authorized under subsection 213(h). Ironically, this provision is made not to apply to CWIP in rate base resulting from a finding of "severe financial difficulty." See subsection 213(f) which omits reference to the imprudence limitation of subsection 213(h)(2) while applying certain of the other restrictions. In plain English, this means that while under existing law imprudent expenses are barred from rate base, they must be allowed in rate base by H.R. 555, subject to later refund, where severe financial distress is demonstrated.

Third, this subsection expressly prohibits any increase that would have "an anticompetitive effect" as a direct result of CWIP in rate base. This section appears designed to prohibit price squeeze from resulting from allowing CWIP. Accordingly this provision essentially restates existing law.

Fourth, this subsection would allow customers to certify that certain facilities will not be used to serve them or would be used to serve them for only a fraction of the facility's life, thereby obtaining relief from rate increases attributable to the planned facility. The 1983 CWIP rule affords similar relief to customers leaving a utility's system but imposed on the certifying customer in that case the responsibility to demonstrate that the demand it represents did not figure in the utility's decision to construct the facilities. This aspect of the Commission's rule is being reviewed by the D.C. Circuit. Therefore, H.R. 555 appears to make it easier for some wholesale customers to avoid CWIP charges than does the Commission's order. It is, nevertheless, unclear what could be done under the statute if the customer's certification of departure from the utility's system eventually proved to be false or incorrect.

Fifth, subsection (h) provides a 6% per annum rate impact limitation similar to that in Order No. 298. However, because of the way paragraph (h)(5) of the statute is written, a 12% CWIP-related rate increase is possible within a relatively short period of time. The Commission's two-year impact limitation attempts to avoid such "rate shock" by requiring that a CWIP increase be in effect for at least 10 months before another is sought.

Finally, this subsection prevents any rate increase attributable to the inclusion of CWIP in rate base to be charged for power sold prior to the date of a "Commission order approving such increase." It is unclear whether this last phrase refers to a suspension order or a final order by the Commission.

Subsection 213(k) is the so-called "mirror-CWIP" provision. It requires the Commission to exclude from rates, after the in-service date of any facility, an amount of revenues equal to the revenues derived from CWIP prior to the in-service date. However, this provision is mandatory only "insofar as the Commission determines that such action is just and reasonable." The Committee Report states that the Commission has "maximum discretion" in this matter because of the financial indices created by prolonged deferrals of revenue from operational plant. The deferral may be for any length of time, but not for a period longer than the period over which CWIP was included in rates. It is unclear exactly how this measure would be implemented. Its consequences for utility finances could be adverse, and it may provide an incentive to lengthen construction times unnecessarily.

S. 1069

S. 1069 would amend section 213 of the Federal Power Act to require an applicant that wants permission to include CWIP in its rate base to include five elements in its application to the Commission. (Section 213(b)(2)). The most important of the five elements is that the applicant would be required to certify that it will be in "severe financial difficulty" (as defined in proposed section 213(f)) unless all or part of its CWIP is included in its rate base. Other than the general application requirements, S. 1069 does not contain a threshold test for filing for rate base treatment of CWIP, as does H.R. 555.

S. 1069 would provide that the Commission approve inclusion of all or part of an applicant's CWIP in its rate base if and when, after holding an evidentiary hearing, the Commission were to make eight specific findings. (Section 213(b)(3)). The most important Commission finding is that, unless all or part of CWIP is included in the utility's rate base, the applicant would be in "severe financial difficulty." S. 1069 is closer to the Commission's previous policy because it allows CWIP in rate base only for financial distress, whereas H.R. 555 provides an alternative ground for CWIP.

This bill would, in various ways, limit the amount of CWIP that the Commission would include in an applicant's rate base even if the utility were found eligible. (Section 213(d)). The most important of the five limitations prescribed is that the amount included must not exceed an amount necessary to alleviate or prevent the applicant's "severe financial difficulty."

Unlike H.R. 555, the Commission would not have any discretion as to which economic indicators show financial distress. S. 1069 would define "severe financial difficulty" to be "the inability of a public utility to satisfy the minimum indenture requirements governing the issuance of additional debt securities by such public utility." (Section 213(f)(2)). Usually, an indenture requires a company to meet certain financial tests, such as having net earnings that are a certain multiple of the company's total interest expenses, so-called interest coverage ratios. One problem that could arise using S. 1069's definition is that utility companies have indentures that differ in the financial tests that a company must meet in order to be eligible under the indenture to issue additional securities. As a result, some relatively weak companies that have indentures with easy financial tests would not be in "severe financial difficulty," while some relatively strong companies that have indentures with difficult financial tests would be in "severe financial difficulty."

Procedurally, S. 1069 is less complicated than H.R. 555 because it limits the relief available and leaves the Commission with less discretion. Like H.R. 555, it sets inflexible standards that may have unforeseeable impacts.

S. 817

S. 817 would amend section 205 of the FPA in a way that makes any CWIP costs ineligible for inclusion in rate base, except for costs associated with construction of pollution control facilities or "conversion of oil or gas-fired facilities." (Subsection 205(g)(3)). The bill requires that all other CWIP-related costs "shall be presumed not to be just and reasonable." (Subsection 205(g)(1)). S. 817 therefore represents the most extensive change in Commission policy.

S. 817, nevertheless, provides that the Commission, upon application and after examination of the "propriety" of the costs, shall approve inclusion of CWIP for construction of pollution control facilities, or conversion of oil or gas-fired facilities. S. 817, like S. 1069 and H.R. 555, retains the policy of 100% rate base treatment for fuel conversion and pollution control. Since Order No. 555 in 1976, this practice has achieved widespread acceptance among both proponents and opponents of other forms of CWIP in rate base.

B. Workability:

All of the bills are "workable" in the sense that they can be implemented, although H.R. 555 and S. 1069 would be rather cumbersome. Were any of the three bills to become law, the FERC can and would implement them in a timely fashion.

C. Public Interest:

In a letter to Congressman James T. Broyhill, February 6, 1984, Chairman O'Connor stated his opinion that H.R. 555 would not serve the public interest. A copy of that response is attached.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

Honorable James T. Broyhill
Committee on Energy and Commerce
Room 2125, Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Broyhill:

This is in response to your letter of February 2, 1984, requesting my views on H.R. 555, a bill designed to amend the Federal Power Act to prescribe a new ratemaking treatment for financing expenses incurred in relation to construction work in progress (CWIP). As I understand it, the objective of this legislation is to reverse the Commission's Order No. 298, which many Members apparently find inimical to the interests of ratepayers. Having reviewed the draft legislation and the Commission's present rules, I feel I must disagree with the economic assumptions underlying the bill and the view that the Commission's action somehow contravenes the public interest.

The final rule in Order No. 298 represents years of experience dealing with the cost of financing utility plant as it impacts wholesale electric rates. I believe it is a judicious reform of the anomalous practice of excluding from rate base the cost of financing ongoing construction programs. Not only did the 'financial distress' test for CWIP, which was abandoned by the Commission, afford the industry little assistance in a time of economic hardship and stop-gap regulatory policies, it did not enable utilities to prepare to meet the demands of the future.

H.R. 555 would basically reinstate the prior CWIP policy. As the Commission recognized in its revised CWIP rule, however, both utility companies and ratepayers can be hurt by the prolonged accrual of non-cash earnings on utility books. For the utility, the practice meant high financing costs, lower interest coverage ratios, severely diminished cash flow, and incentives to pursue short-term strategies that may defeat the goals of long-term planning, notably that of providing power to ratepayers at the lowest reasonable cost. More importantly for ratepayers, the earlier practice meant demands for power that did not relate to the current actual cost of that power and sudden increases in rates each time the costs of a newly operational facility, including accrued financing costs, were added to rate base. In sum, the enforced delay in recovering financing costs is difficult to justify for any utility and is indefensible for those undergoing financial stress. Yet, H.R. 555 would essentially reinstate that practice and place substantial impediments in the way of more expeditious cost recovery.

The current utility picture also disfavors the H.R. 555 approach. Large construction programs will eventually mean precipitous rate increases as facilities become operable. Many public utilities have construction programs which are significant in terms of the net worth of each such company. Such large construction programs have enormous implications for rates. Without a viable CWIP policy, the long-term cost of reliable power will escalate.

To date, twelve rate cases involving CWIP have been filed under the new rule. As these and future cases are addressed by the Commission, the Congress and the public will be able to ascertain more clearly whether the Commission's approach is equitable and economically viable. The Congress may wish to benefit from the Commission's experience under the new rule before requiring so radical a reversal of Commission ratemaking policy.

The question at hand is whether the regulatory policy under which the utility industry meets the future will assist rational economic planning or lead to piecemeal short-term strategies. I believe the Commission's rule offers long-term benefits to the public that the Congress should not cast aside, particularly in favor of the administratively cumbersome and economically unpredictable scheme of H.R. 555.

If I can supply further information on this important matter, please do not hesitate to contact me.

Sincerely,

Raymond J. O'Connor
Chairman

Question I-4: Does Order 298 change how FERC treats cancelled and abandoned facilities? Does Order 298 transfer any of the risk of plant cancellation from shareholders to ratepayers? Has the Commission ever denied passthrough of costs of cancelled or abandoned facilities?

Answer: Under Order No. 298, there is no change in how the Commission treats cancelled and abandoned facilities. Briefly, longstanding Commission policy allows utility investors to recover the costs of all prudently invested capital, including prudent investment in cancelled or abandoned plant. (This does not include the carrying charges on unamortized amounts of cancelled plant). See New England Power Co., Opinion No. 49, 8 FERC ¶ 61,054 (July 19, 1979), aff'd sub nom. NEPCO Municipal Rate Comm. v. FERC, 668 F.2d 1327 (D.C. Cir. 1981), cert. denied, 102 S. Ct. 2928 (1982).

Order No. 298 does not shift the risk of plant cancellation from shareholders to ratepayers. See response to Question No. II-9 above for further discussion.

The Commission has in the past denied passthrough of costs of cancelled or abandoned plant. The general proposition is that ratepayers do not bear the responsibility of imprudently incurred expenses, e.g., Public Service Company of New Hampshire, Opinion No. 37, 6 FERC ¶ 61,299 (1979); Virginia Electric Power Company, Opinion No. 118, 15 FERC ¶ 61,052 at 61,112 (1981); Northern States Power Company, Opinion No. 134, 17 FERC ¶ 61,196 at 61,383 (1981), aff'd per curiam, 690 F.2d 674 (8th Cir. 1982). This proposition has been applied also to expenses related to cancelled or abandoned plant. Southern California Edison Company, Opinion No.62, 8 FERC ¶ 61,198 at 61,679-61,680 (Aug. 22, 1979), aff'd, Anaheim, Riverside, et al. v. FERC, 669 F.2d 799 (D.C. Cir. 1981) (disallowance of plant amortization because of serious doubt about prudence of investment); New England Power Company, 27 FERC ¶ 63,037 (May 4, 1984) (initial decision disallowed portion of plant amortization pending Commission review); Minnesota Power & Light Co., Opinion No. 87, 11 FERC ¶ 61,313 (June 24, 1980) (disallowed amortization of abandoned pollution control device because of imprudence).

Question I-5: Would you please detail state-by-state the impact Order 298 will have on rates under the assumption that all of the pending CWIP applications will be approved in full by the Commission:

Answer:

Arkansas:	
Southwestern Electric Power Company	$ 120,000
California:	
Southern California Edison Company	$10,550,000
Illinois:	
Illinois Power Company	$ 590,000
Kansas:	
Kansas Gas & Electric Company	$ 1,860,000
Kentucky:	
Kentucky Utilities Company	$ 3,380,000
Massachusetts:	
New England Power Company	$37,000,000
Montaup Electric Company	$ 6,650,000
Canal Electric Company	$14,250,000
Mississippi:	
Mississippi Power & Light Company	$ 500,000
New Hampshire:	
New England Power Company	$ 1,500,000
New York:	
Niagara Mohawk Power Corporation	$ 410,000
North Carolina:	
Carolina Power & Light Company	$11,460,000
Rhode Island:	
New England Power Company	$11,700,000
Montaup Electric Company	$ 4,650,000
South Carolina:	
Carolina Power & Light Company	$ 510,000
Texas:	
El Paso Electric Company	$ 360,000
West Texas Utilities Company	$ 1,970,000
Virginia:	
Virginia Electric & Power Company	$ 9,160,000
Wisconsin :	
Wisconsin Public Service Company	$ 400,000

Question I-6: Would you provide the Subcommittee with a current list of those public utilities that are FERC jurisdictional and the amount and proportion of sales by each which is FERC jurisdictional?

Would you also provide the Subcommittee with a list of the amount of power sold in each State which is FERC jurisdictional?

Answer: The information that is currently available is for data year 1982. A listing of 203 utilities' sales for resale which are generally requirements type sales subject to FERC jurisdiction is provided at Attachment A. These utilities are ranked beginning with those with the largest amounts of sales for resale. Jurisdictional wheeling and interchange transactions are not included in sales for resale. Another ranked listing of these 203 utilities' total sales is provided at Attachment B. The information is unavailable, categorized by state; however, the first two digits of the identification code may be used in conjunction with the following table to determine the states in which the utilities conduct most of their business.

Alabama	01	Missouri	29
Alaska	02	Montana	30
Arizona	04	Nebraska	31
Arkansas	05	Nevada	32
California	06	New Hampshire	33
Colorado	08	New Jersey	34
Connecticut	09	New Mexico	35
Delaware	10	New York	36
District of Columbia	11	North Carolina	37
Florida	12	North Dakota	38
Georgia	13	Ohio	39
Hawaii	15	Oklahoma	40
Idaho	16	Oregon	41
Illinois	17	Pennsylvania	42
Indiana	18	Rhode Island	44
Iowa	19	South Carolina	45
Kansas	20	South Dakota	46
Kentucky	21	Tennessee	47
Louisiana	22	Texas	48
Maine	23	Utah	49
Maryland	24	Vermont	50
Massachusetts	25	Virginia	51
Michigan	26	Washington	53
Minnesota	27	West Virginia	54
Mississippi	28	Wisconsin	55
		Wyoming	56

Utilities located in Alaska, Hawaii and certain utilities located in Texas have nonjurisdictional sales for resale. The nonjurisdictional utilities located in Texas are: Dallas Power & Light Company, Houston Lighting & Power Company, Texas Electric Service Company and Texas Power & Light Company.

PRIVATELY OWNED ELECTRIC UTILITY COMPANIES- 1982 82

SALES FOR RESALES _ MWH

	CODE	COMPANY NAME	AMOUNT
1	250960	NEW ENGLAND PWR CO	16,845,419
2	130450	GEORGIA PWR CO	12,212,470
3	180570	INDIANA & MICHIGAN ELEC CO	10,985,636
4	540120	APPALACHIAN PWR CO	9,707,201
5	090900	NORTHEAST NUCLEAR ENERGY CO	9,125,395
6	391470	OHIO VALLEY ELEC CORP	8,993,805
7	180450	INDIANA KENTUCKY ELEC CORP	8,771,202
8	391410	OHIO PWR CO	8,556,227
9	370690	DUKE PWR CO	8,068,159
10	050220	ARKANSAS PWR & LT CO	7,388,457
11	370360	CAROLINA PWR & LT CO	7,222,284
12	421870	WEST PENN PWR CO	6,514,089
13	411270	PACIFIC PWR & LT CO	5,819,314
14	010100	ALABAMA PWR CO	5,475,327
15	400970	OKLAHOMA GAS & ELEC CO	5,282,282
16	011700	SOUTHERN ELEC GENERATING CO	5,033,551
17	481200	SOUTHWESTERN ELEC PWR CO	5,010,428
18	491450	UTAH PWR & LT CO	4,885,707
19	291500	UNION ELEC CO	4,870,511
20	061490	SOUTHERN CALIF EDISON CO	4,846,817
21	511520	VIRGINIA ELEC & PWR CO	4,712,059
22	090450	CONN YANKEE ATOMIC PWR CO	4,537,913
23	481550	TEXAS PWR & LT CO	4,511,411
24	230960	MAINE YANKEE ATOMIC PWR CO	4,510,524
25	250270	CANAL ELEC CO	4,435,020
26	160430	IDAHO PWR CO	4,416,611
27	391330	OHIO EDISON CO	4,303,990
28	241050	POTOMAC EDISON CO THE	4,211,655
29	501350	VT YANKEE NUCLEAR PWR CORP	4,174,255
30	170590	ELEC ENERGY INC	4,155,443
31	540950	MONONGAHELA PWR CO	4,135,790
32	250850	MONTAUP ELEC CO	3,937,329
33	421440	PHILADELPHIA ELEC CO	3,875,570
34	361050	NIAGARA MOHAWK PWR CORP	3,846,248
35	271210	NORTHERN STATES PWR CO OF MINNES	3,790,463
36	120290	FLORIDA PWR CORP	3,630,199
37	401320	PUB SERV CO OF OKLAHOMA	3,575,070
38	061090	PACIFIC GAS & ELEC CO	3,544,563
39	501300	VERMONT ELEC PWR CO INC	3,429,235
40	390500	COLUMBUS & SOUTHERN OHIO ELEC CO	3,399,126
41	181150	PUB SERV CO OF IND INC	3,350,910
42	480860	HOUSTON LIGHTING & PWR CO	3,327,122
43	120380	FLORIDA PWR & LT CO	3,282,998
44	481320	SOUTHWESTERN PUB SERV CO	3,040,785
45	351570	PUB SERV CO OF NEW MEXICO	2,840,957
46	531630	WASHINGTON WTR PWR CO THE	2,837,290
47	180250	COMMONWEALTH EDISON CO IND	2,682,951
48	250220	BOSTON EDISON CO	2,584,120

PRIVATELY OWNED ELECTRIC UTILITY COMPANIES- 1982 82

SALES FOR RESALES _ MWH

- (CONTINUED)

	CODE	COMPANY NAME	AMOUNT
49	280970	MISSISSIPPI PWR & LT CO	2,524,786
50	230600	MAINE ELEC PWR CO INC	2,429,641
51	360400	CON EDISON CO OF N Y INC	2,420,305
52	040350	ARIZONA PUB SERV CO	2,267,503
53	531240	PUGET SOUND PWR & LT CO	2,239,979
54	210910	KENTUCKY UTILITIES CO	2,200,182
55	301130	MONTANA PWR CO THE	2,187,580
56	271030	MINNESOTA PWR & LT CO	2,091,053
57	390430	CINCINNATI GAS & ELEC CO THE	2,041,870
58	220690	GULF STATES UTILITIES CO	2,032,097
59	411390	PORTLAND GENERAL ELEC CO	1,998,122
60	170320	CENTRAL ILL PUB SERV CO	1,977,682
61	041600	TUCSON ELEC POWER CO.	1,844,916
62	280760	MISSISSIPPI PWR CO	1,829,954
63	551800	WISCONSIN PWR & LT CO	1,770,954
64	261310	UPPER PENINSULA GENERATING CO	1,656,608
65	360350	CENTRAL HUDSON GAS & ELEC CORP	1,635,766
66	551710	WISCONSIN ELEC PWR CO	1,594,620
67	241470	SUSQUEHANNA ELEC CO	1,567,947
68	331230	PUB SERV CO OF NEW HAMPSHIRE	1,506,114
69	361150	ORANGE & ROCKLAND UTILITIES INC	1,488,178
70	080880	PUB SERV CO OF COLORADO	1,420,396
71	210850	KENTUCKY PWR CO	1,402,397
72	481900	WEST TEXAS UTILITIES CO	1,274,811
73	481380	TEXAS ELEC SERV CO	1,227,206
74	170720	ILLINOIS PWR CO	1,203,586
75	100150	DELMARVA PWR & LT & SUBSIDIARY C	1,180,988
76	551820	WISCONSIN PUB SERV CORP	1,173,315
77	110250	POTOMAC ELEC PWR CO	1,140,431
78	361350	ROCHESTER GAS & ELEC CORP	1,131,143
79	260300	DETROIT EDISON CO THE	1,126,621
80	381150	OTTER TAIL PWR CO	1,106,831
81	201040	KANSAS GAS & ELEC CO	1,077,695
82	421330	PENNSYLVANIA ELEC CO	1,009,277
83	201130	KANSAS PWR & LT CO	933,115
84	180970	NORTHERN INDIANA PUB SERV CO	916,441
85	170410	COMMONWEALTH EDISON CO	903,614
86	251800	YANKEE ATOMIC ELEC CO	832,161
87	260210	CONSUMERS PWR CO	867,631
88	220930	LOUISIANA PWR & LT CO	867,379
89	421660	SAFE HARBOR WATER PWR CORP	861,429
90	421370	PENNSYLVANIA PWR & LT CO	853,227
91	120650	GULF PWR CO	845,642
92	480280	CENTRAL PWR & LT CO	779,051
93	451320	SOUTH CAROLINA ELEC & GAS CO	770,830
94	500220	CENTRAL VERMONT PUB SERV CORP	691,150
95	221340	NEW ORLEANS PUB SERV INC	687,956
96	190820	INTERSTATE PWR CO	598,109

PRIVATELY OWNED ELECTRIC UTILITY COMPANIES- 1982

SALES FOR RESALES _ MWH - (CONTINUED)

	CODE	COMPANY NAME	AMOUNT
97	200320	CENTEL CORPORATION	571,296
98	181270	SOUTHERN IND GAS & ELEC CO	567,160
99	360870	LONG ISLAND LIGHTING CO	566,545
100	390560	DAYTON PWR & LT CO THE	527,893
101	090370	CONNECTICUT LT & PWR CO THE	501,080
102	061240	SAN DIEGO GAS & ELEC CO	480,569
103	290460	EMPIRE DISTRICT ELEC CO	456,435
104	391680	TOLEDO EDISON CO THE	395,270
105	321460	SIERRA PACIFIC PWR CO	352,017
106	250590	HOLYOKE WATER PWR CO	343,938
107	290700	KANSAS CITY PWR & LT CO	325,997
108	550920	NORTHERN STATES PWR CO OF WISCON	318,328
109	190890	IOWA ELEC LT & PWR CO	314,973
110	340780	JERSEY CENTRAL PWR & LT CO	309,756
111	551850	WISCONSIN RIVER PWR CO	229,650
112	480450	EL PASO ELEC CO	224,899
113	421140	METROPOLITAN EDISON CO	215,988
114	550720	MADISON GAS & ELEC CO	215,063
115	291210	MISSOURI UTILITIES CO	195,649
116	251450	WESTERN MASSACHUSETTS ELEC CO	189,425
117	291080	MISSOURI PUB SERV CO	183,247
118	190900	IOWA ILLINOIS GAS & ELEC CO	170,551
119	230370	CENTRAL MAINE PWR CO	152,166
120	500470	GREEN MOUNTAIN PWR CORP	145,931
121	390470	CLEVELAND ELEC ILLUM CO THE	138,805
122	341310	PUB SERV ELEC AND GAS CO	132,339
123	460240	BLACK HILLS PWR & LT CO	126,211
124	422000	YORK HAVEN PWR CO	124,934
125	480390	DALLAS PWR & LT CO	123,090
126	190970	IOWA PUB SERV CO	122,134
127	260330	EDISON SAULT ELEC CO	120,812
128	481400	TEXAS NEW MEXICO POWER CO	116,537
129	421350	PENNSYLVANIA PWR CO	116,162
130	230940	MAINE PUB SERV CO	109,835
131	250570	HOLYOKE PWR & ELEC CO	102,892
132	261320	UPPER PENINSULA PWR CO	102,219
133	451180	LOCKHART PWR CO	92,218
134	250250	CAMBRIDGE ELEC LT CO	91,316
135	481240	SOUTHWESTERN ELEC SERV CO	85,458
136	291060	MISSOURI PWR & LT CO	83,647
137	320890	NEVADA PWR CO	79,015
138	550680	LAKE SUPERIOR DISTRICT PWR CO	74,225
139	260870	MICHIGAN PWR CO	67,039
140	191030	IOWA SOUTHERN UTILITIES CO	64,658
141	551420	SUPERIOR WATER LT & PR CO	56,693
142	170290	CENTRAL ILLINOIS LT CO	56,306
143	371170	NANTAHALA PWR & LT CO	47,395
144	262280	CLIFFS ELEC SERV CO	44,793

PRIVATELY OWNED ELECTRIC UTILITY COMPANIES- 1982 82

SALES FOR RESALES _ MWH - (CONTINUED)

	CODE	COMPANY NAME	AMOUNT
145	180630	INDIANAPOLIS PWR & LT CO	33,186
146	230190	BANGOR HYDRO ELEC CO	30,635
147	211900	UNION LT HEAT AND PWR CO THE	30,033
148	250275	COMMONWEALTH ELEC CO	24,033
149	120560	FLORIDA PUB UTILITIES CO	18,114
150	190930	IOWA PWR & LT CO	16,606
151	211270	LOUISVILLE GAS & ELEC CO	15,074
152	351030	NEW MEXICO ELEC SERV CO	10,908
153	420520	DUQUESNE LT CO	10,868
154	180100	ALCOA GENERATING CORP	10,090
155	220240	CENTRAL LOUISIANA ELEC PWR CO	8,454
156	361000	NEW YORK STATE ELEC & GAS CORP	6,930
157	171340	SOUTH BELOIT WATER G & E CO	6,373
158	461110	NORTHWESTERN PUB SERV CO	4,994
159	550330	CONSOLIDATED WATER PWR CO	4,889
160	550950	NORTHWESTERN WISCONSIN ELEC CO	4,375
161	250780	MASSACHUSETTS ELEC CO	4,222
162	290940	MISSOURI EDISON CO	4,017
163	171010	MT CARMEL PUB UTILITY CO	2,599
164	250280	EASTERN EDISON CO	1,030
165	040540	CITIZENS UTILITIES CO	770
166	440260	BLACKSTONE VALLEY ELEC CO	623
167	440600	NARRAGANSETT ELEC CO THE	292
168	250460	FITCHBURG GAS & ELEC LT CO	211
169	151000	MAUI ELEC CO LTD	130
170	240280	CONOWINGO PWR CO	021
171	241540	SUSQUEHANNA PWR CO THE	000
172	240110	BALTIMORE GAS & ELEC CO	000
173	250900	NANTUCKET GAS & ELEC	000
174	260100	ALPENA PWR CO	000
175	291330	ST JOSEPH LT & PWR CO	000
176	330260	CONCORD ELEC CO	000
177	330350	CONNECTICUT VALLEY ELEC CO	000
178	330520	EXETER & HAMPTON ELEC CO	000
179	330640	GRANITE STATE ELEC CO	000
180	341400	ROCKLAND ELEC CO	000
181	340240	ATLANTIC CITY ELEC CO	000
182	360930	LONG SAULT INC	000
183	374000	YADKIN INC	000
184	380800	MONTANA DAKOTA UTILITIES CO	000
185	171310	SHERRARD PWR SYSTEM	000
186	121000	REEDY CREEK UTIL CO	000
187	121190	TAMPA ELEC CO	000
188	131000	SAVANNAH ELEC & PWR CO	000
189	150250	HAWAIIAN ELEC CO INC	000
190	150280	HAWAII ELEC LT CO	000
191	020250	ALASKA ELEC LT & PWR CO	000
192	080550	HOME LT & PWR CO	000

PRIVATELY OWNED ELECTRIC UTILITY COMPANIES- 1982 82

SALES FOR RESALES _ MWH - (CONTINUED)

	CODE	COMPANY NAME	AMOUNT
193	091590	UNITED ILLUMINATING CO THE	000
194	440710	NEWPORT ELEC CORP	000
195	421820	UGI CORP	000
196	470940	KINGSPORT PWR CO	000
197	471500	TAPOCO INC	000
198	421485	PIKE COUNTY LIGHT & PWR	000
199	420350	CITIZEN'S ELEC CO	000
200	410250	CP NATIONAL	000
201	511160	OLD DOMINION PWR CO	000
202	541900	WHEELING ELEC CO	000
203	560130	CHEYENNE LIGHT FUEL & PWR CO	000
			339,464,313

PRIVATELY OWNED ELECTRIC UTILITY COMPANIES- 1982 82

TOTAL ELECTRICITY SALES _ MWH

	CODE	COMPANY NAME	AMOUNT
1	061090	PACIFIC GAS & ELEC CO	60,519,307
2	061490	SOUTHERN CALIF EDISON CO	59,326,851
3	170410	COMMONWEALTH EDISON CO	59,225,130
4	480860	HOUSTON LIGHTING & PWR CO	56,529,390
5	370690	DUKE PWR CO	51,380,037
6	130450	GEORGIA PWR CO	49,702,722
7	120380	FLORIDA PWR & LT CO	47,072,951
8	511520	VIRGINIA ELEC & PWR CO	39,980,247
9	010100	ALABAMA PWR CO	33,939,134
10	260300	DETROIT EDISON CO THE	31,994,682
11	361050	NIAGARA MOHAWK PWR CORP	31,906,100
12	370360	CAROLINA PWR & LT CO	30,482,816
13	360400	CON EDISON CO OF N Y INC	29,759,878
14	391410	OHIO PWR CO	29,613,817
15	421440	PHILADELPHIA ELEC CO	29,510,827
16	341310	PUB SERV ELEC AND GAS CO	29,145,573
17	540120	APPALACHIAN PWR CO	28,604,496
18	220690	GULF STATES UTILITIES CO	28,410,868
19	481550	TEXAS PWR & LT CO	28,231,471
20	411270	PACIFIC PWR & LT CO	24,728,355
21	260210	CONSUMERS PWR CO	24,612,443
22	291500	UNION ELEC CO	24,163,530
23	220930	LOUISIANA PWR & LT CO	23,940,596
24	271210	NORTHERN STATES PWR CO OF MINNES	22,835,767
25	421370	PENNSYLVANIA PWR & LT CO	22,298,390
26	180570	INDIANA & MICHIGAN ELEC CO	21,699,209
27	050220	ARKANSAS PWR & LT CO	21,508,975
28	481380	TEXAS ELEC SERV CO	20,984,177
29	391330	OHIO EDISON CO	20,968,064
30	400970	OKLAHOMA GAS & ELEC CO	20,922,047
31	421870	WEST PENN PWR CO	19,377,825
32	120290	FLORIDA PWR CORP	18,760,816
33	181150	PUB SERV CO OF IND INC	17,634,935
34	240110	BALTIMORE GAS & ELEC CO	17,292,179
35	551710	WISCONSIN ELEC PWR CO	17,279,680
36	491450	UTAH PWR & LT CO	17,241,258
37	110250	POTOMAC ELEC PWR CO	17,117,110
38	250960	NEW ENGLAND PWR CO	16,868,366
39	390470	CLEVELAND ELEC ILLUM CO THE	16,165,157
40	531240	PUGET SOUND PWR & LT CO	16,132,806
41	090370	CONNECTICUT LT & PWR CO THE	15,950,457
42	391470	OHIO VALLEY ELEC CORP	15,866,835
43	481200	SOUTHWESTERN ELEC PWR CO	15,155,859
44	080880	PUB SERV CO OF COLORADO	15,041,410
45	411390	PORTLAND GENERAL ELEC CO	14,906,537
46	390430	CINCINNATI GAS & ELEC CO THE	14,550,639
47	160430	IDAHO PWR CO	14,178,233
48	401320	PUB SERV CO OF OKLAHOMA	14,011,693

PRIVATELY OWNED ELECTRIC UTILITY COMPANIES- 1982 82

TOTAL ELECTRICITY SALES _ MWH - (CONTINUED)

	CODE	COMPANY NAME	AMOUNT
49	170720	ILLINOIS PWR CO	13,977,699
50	480280	CENTRAL PWR & LT CO	13,910,443
51	360370	LONG ISLAND LIGHTING CO	13,086,166
52	340780	JERSEY CENTRAL PWR & LT CO	12,985,841
53	040350	ARIZONA PUB SERV CO	12,950,727
54	481320	SOUTHWESTERN PUB SERV CO	12,864,272
55	480390	DALLAS PWR & LT CO	12,323,084
56	390500	COLUMBUS & SOUTHERN OHIO ELEC CO	12,218,113
57	250220	BOSTON EDISON CO	12,030,254
58	180970	NORTHERN INDIANA PUB SERV CO	11,965,825
59	241050	POTOMAC EDISON CO THE	11,621,406
60	451320	SOUTH CAROLINA ELEC & GAS CO	11,489,544
61	540950	MONONGAHELA PWR CO	11,401,464
62	250780	MASSACHUSETTS ELEC CO	11,130,212
63	420520	DUQUESNE LT CO	11,037,681
64	421330	PENNSYLVANIA ELEC CO	10,941,351
65	361000	NEW YORK STATE ELEC & GAS CORP	10,733,296
66	061240	SAN DIEGO GAS & ELEC CO	10,528,941
67	210910	KENTUCKY UTILITIES CO	10,349,436
68	390560	DAYTON PWR & LT CO THE	10,041,656
69	121190	TAMPA ELEC CO	10,038,401
70	280970	MISSISSIPPI PWR & LT CO	9,841,251
71	090900	NORTHEAST NUCLEAR ENERGY CO	9,125,395
72	531630	WASHINGTON WTR PWR CO THE	8,995,254
73	180630	INDIANAPOLIS PWR & LT CO	8,880,376
74	180450	INDIANA KENTUCKY ELEC CORP	8,771,202
75	170320	CENTRAL ILL PUB SERV CO	8,590,639
76	290700	KANSAS CITY PWR & LT CO	8,072,030
77	301130	MONTANA PWR CO THE	7,664,679
78	421140	METROPOLITAN EDISON CO	7,426,089
79	211270	LOUISVILLE GAS & ELEC CO	7,385,660
80	100150	DELMARVA PWR & LT & SUBSIDIARY C	7,249,442
81	201040	KANSAS GAS & ELEC CO	7,238,464
82	271030	MINNESOTA PWR & LT CO	7,080,908
83	280760	MISSISSIPPI PWR CO	7,057,715
84	551800	WISCONSIN PWR & LT CO	6,970,663
85	391630	TOLEDO EDISON CO THE	6,918,279
86	551820	WISCONSIN PUB SERV CORP	6,809,880
87	230370	CENTRAL MAINE PWR CO	6,662,139
88	201130	KANSAS PWR & LT CO	6,637,045
89	351570	PUB SERV CO OF NEW MEXICO	6,491,459
90	361350	ROCHESTER GAS & ELEC CORP	6,369,135
91	120650	GULF PWR CO	6,087,172
92	331230	PUB SERV CO OF NEW HAMPSHIRE	6,068,155
93	041600	TUCSON ELEC POWER CO.	5,963,590
94	210850	KENTUCKY PWR CO	5,834,961
95	320890	NEVADA PWR CO	5,753,465
96	340240	ATLANTIC CITY ELEC CO	5,592,117

PRIVATELY OWNED ELECTRIC UTILITY COMPANIES- 1982 82

TOTAL ELECTRICITY SALES _ MWH - (CONTINUED)

	CODE	COMPANY NAME	AMOUNT
97	221340	NEW ORLEANS PUB SERV INC	5,544,934
98	431400	TEXAS NEW MEXICO POWER CO	5,336,492
99	150250	HAWAIIAN ELEC CO INC	5,164,332
100	011700	SOUTHERN ELEC GENERATING CO	5,033,551
101	360350	CENTRAL HUDSON GAS & ELEC CORP	5,027,830
102	170590	ELEC ENERGY INC	4,864,821
103	431900	WEST TEXAS UTILITIES CO	4,803,428
104	090450	CONN YANKEE ATOMIC PWR CO	4,537,913
105	230960	MAINE YANKEE ATOMIC PWR CO	4,510,524
106	091590	UNITED ILLUMINATING CO THE	4,475,164
107	250270	CANAL ELEC CO	4,435,020
108	220240	CENTRAL LOUISIANA ELEC PWR CO	4,396,630
109	190930	IOWA PWR & LT CO	4,215,358
110	180100	ALCOA GENERATING CORP	4,203,020
111	170290	CENTRAL ILLINOIS LT CO	4,189,184
112	501350	VT YANKEE NUCLEAR PWR CORP	4,174,255
113	190890	IOWA ELEC LT & PWR CO	4,099,889
114	190820	INTERSTATE PWR CO	4,074,423
115	250850	MONTAUP ELEC CO	3,987,329
116	321460	SIERRA PACIFIC PWR CO	3,862,664
117	190900	IOWA ILLINOIS GAS & ELEC CO	3,854,157
118	480450	EL PASO ELEC CO	3,651,163
119	381150	OTTER TAIL PWR CO	3,601,364
120	181270	SOUTHERN IND GAS & ELEC CO	3,599,712
121	361150	ORANGE & ROCKLAND UTILITIES INC	3,537,519
122	501300	VERMONT ELEC PWR CO INC	3,429,235
123	440600	NARRAGANSETT ELEC CO THE	3,414,589
124	251450	WESTERN MASSACHUSETTS ELEC CO	3,276,576
125	550920	NORTHERN STATES PWR CO OF WISCON	3,248,845
126	421350	PENNSYLVANIA PWR CO	3,057,406
127	190970	IOWA PUB SERV CO	3,044,514
128	180250	COMMONWEALTH EDISON CO IND	2,682,951
129	200320	CENTEL CORPORATION	2,624,739
130	290460	EMPIRE DISTRICT ELEC CO	2,436,856
131	230600	MAINE ELEC PWR CO INC	2,429,641
132	291030	MISSOURI PUB SERV CO	2,413,119
133	250275	COMMONWEALTH ELEC CO	2,339,032
134	500220	CENTRAL VERMONT PUB SERV CORP	2,336,365
135	131000	SAVANNAH ELEC & PWR CO	2,193,642
136	550720	MADISON GAS & ELEC CO	1,941,471
137	250280	EASTERN EDISON CO	1,900,725
138	211900	UNION LT HEAT AND PWR CO THE	1,784,633
139	380300	MONTANA DAKOTA UTILITIES CO	1,775,787
140	291060	MISSOURI PWR & LT CO	1,746,513
141	541900	WHEELING ELEC CO	1,671,027
142	261310	UPPER PENINSULA GENERATING CO	1,656,608
143	241470	SUSQUEHANNA ELEC CO	1,567,947
144	191030	IOWA SOUTHERN UTILITIES CO	1,556,666

PRIVATELY OWNED ELECTRIC UTILITY COMPANIES- 1982 82

TOTAL ELECTRICITY SALES _ MWH - (CONTINUED)

	CODE	COMPANY NAME	AMOUNT
145	471500	TAPOCO INC	1,508,586
146	500470	GREEN MOUNTAIN PWR CORP	1,393,126
147	262280	CLIFFS ELEC SERV CO	1,318,456
148	230190	BANGOR HYDRO ELEC CO	1,260,870
149	460240	BLACK HILLS PWR & LT CO	1,121,265
150	291210	MISSOURI UTILITIES CO	1,106,454
151	440260	BLACKSTONE VALLEY ELEC CO	1,089,958
152	470940	KINGSPORT PWR CO	1,050,695
153	291330	ST JOSEPH LT & PWR CO	1,035,010
154	250250	CAMBRIDGE ELEC LT CO	949,348
155	374000	YADKIN INC	920,787
156	251800	YANKEE ATOMIC ELEC CO	882,161
157	421660	SAFE HARBOR WATER PWR CORP	861,429
158	341400	ROCKLAND ELEC CO	831,274
159	040540	CITIZENS UTILITIES CO	830,378
160	290940	MISSOURI EDISON CO	823,196
161	410250	CP NATIONAL	792,875
162	481240	SOUTHWESTERN ELEC SERV CO	762,245
163	351030	NEW MEXICO ELEC SERV CO	752,362
164	461110	NORTHWESTERN PUB SERV CO	735,838
165	550680	LAKE SUPERIOR DISTRICT PWR CO	691,920
166	261320	UPPER PENINSULA PWR CO	680,370
167	260370	MICHIGAN PWR CO	665,992
168	421820	UGI CORP	643,706
169	511160	OLD DOMINION PWR CO	640,035
170	371170	NANTAHALA PWR & LT CO	547,470
171	230940	MAINE PUB SERV CO	539,818
172	550330	CONSOLIDATED WATER PWR CO	493,051
173	151009	MAUI ELEC CO LTD	482,821
174	080550	HOME LT & PWR CO	478,187
175	240280	CONOWINGO PWR CO	467,657
176	260330	EDISON SAULT ELEC CO	463,328
177	560130	CHEYENNE LIGHT FUEL & PWR CO	462,297
178	551420	SUPERIOR WATER LT & PR CO	454,208
179	150280	HAWAII ELEC LT CO	452,233
180	250590	HOLYOKE WATER PWR CO	445,283
181	440710	NEWPORT ELEC CORP	405,594
182	330640	GRANITE STATE ELEC CO	398,645
183	120560	FLORIDA PUB UTILITIES CO	339,541
184	250460	FITCHBURG GAS & ELEC LT CO	336,366
185	121000	REEDY CREEK UTIL CO	319,850
186	330520	EXETER & HAMPTON ELEC CO	309,360
187	330260	CONCORD ELEC CO	297,872
188	260100	ALPENA PWR CO	291,961
189	551850	WISCONSIN RIVER PWR CO	229,650
190	451180	LOCKHART PWR CO	227,220
191	020250	ALASKA ELEC LT & PWR CO	168,587
192	330350	CONNECTICUT VALLEY ELEC CO	151,138

PRIVATELY OWNED ELECTRIC UTILITY COMPANIES- 1982 82

TOTAL ELECTRICITY SALES _ MWH - (CONTINUED)

	CODE	COMPANY NAME	AMOUNT
193	171310	SHERRARD PWR SYSTEM	144,147
194	171010	MT CARMEL PUB UTILITY CO	132,915
195	422000	YORK HAVEN PWR CO	124,934
196	171340	SOUTH BELOIT WATER G & E CO	121,827
197	420350	CITIZEN'S ELEC CO	105,054
198	250570	HOLYOKE PWR & ELEC CO	102,892
199	550950	NORTHWESTERN WISCONSIN ELEC CO	90,175
200	250900	NANTUCKET GAS & ELEC	49,689
201	421485	PIKE COUNTY LIGHT & PWR	30,653
202	241540	SUSQUEHANNA PWR CO THE	000
203	360930	LONG SAULT INC	000
			1,937,414,943

Question I-7a: How many public utilities applied to FERC (or FPC) for CWIP in rate base prior to Order 298?

Answer: Seven public utilities applied to FERC (or FPC) for CWIP in rate base prior to Order No. 298, under Order No. 555 with severe financial distress claimed, including:

Kansas City Power and Light Company, ER80-315 & 450
El Paso Electric Company, ER77-488 & ER81-426
Louisiana Power and Light Company, ER77-533
Public Service Company of New Mexico, ER77-337 & 338, ER78-478 & 479
Public Service Company of New Hampshire, EL78-15 & ER78-339
Montaup Electric Company, ER81-149, ER82-325 & ER83-110
Utah Power and Light Company, ER77-311

Eight other public utilities filed rate increases pending the effective date of Order No. 555. The name and docket numbers are as follows:

Central Vermont Public Service Corporation, E-9040
Georgia Power Company, E-9091
New England Power Company, E-9140
Northern States Power Company (Minn.), E-9148
Green Mountain Power Corporation, E-9446
Minnesota Power & Light Company, E-9502
Public Service Company of Indiana, Inc., ER76-149
Iowa Power & Light Company, ER76-404 & ER76-658

Note that those utilities that claimed pollution control CWIP per Order No. 555 are not listed, since virtually every utility rate applicant included such construction in rate base.

Question I-7b: What was the basis for these applications?

Answer: The basis for the first seven utilities was severe financial distress due to large construction programs. The others made a general claim to the right to include CWIP in rate base.

Question I-7c: Which were granted?

Answer: Although none of the fifteen public utility CWIP applications were granted, there were a number of settlements reached which did not specifically resolve the issue. One of these settlements was reached after the utility, Public Service Company of New Hampshire, had received an administrative law judge's approval to include CWIP in rate base.

Question I-8: Prior to Order No. 298, what was the Commission's policy with respect to the granting of CWIP in rate base for emergency financial relief? Did any public utilities make any applications on this basis? Were any of these applications granted?

Answer: Prior to Order No. 298 it was the Commission's policy, implemented by regulations, to include CWIP in rate base in cases where the utility could demonstrate "severe financial difficulty which cannot be otherwise alleviated without materially increasing the cost of electricity to consumers." The rule also allowed CWIP associated with pollution control and fuel conversion facilities without meeting the financial distress test, 18 C.F.R. § 2.16 (1978) (superseded). Moreover, the Commission would allow CWIP in rate base only if this demonstration of financial distress was "clearly and convincingly" made. Order No. 555 (Nov. 8, 1976), 41 Fed. Reg. 51,392 (1976), reh'g denied, Order No. 555-A (Jan. 6, 1977), 42 Fed. Reg. 3022 (1977), aff'd without opinion sub nom. Oglethorpe Electric Membership Corp. v. FERC, 574 F.2d 63 (D.C. Cir. 1978).

For further discussion as to the disposition of these cases, see response to Question No. I-7.

Question I-9: To what extent does CWIP in rate base reduce plant construction costs by increasing the constructing utility's bond ratings, thereby reducing its cost of borrowing? Please explain in detail using examples.

Answer: (In the following response, quotations are from *Standard and Poor's Ratings Guide*, 1979, McGraw-Hill.) One of the primary indicators of electric utility bond ratings is the pre-tax interest coverage, which indicates the number of times interest expenses are "covered" by income and income taxes.

> The primary earnings adequacy tests are those centering on fixed charge coverage notwithstanding the fact that differences in coverage levels have narrowed significantly in the past decade. Nevertheless, these tests ... still provide the most direct indication of a company's ability to carry its present debt load as well as to incur additional debt.
>
> Looking at pre-tax coverage alone and discussing rating guidelines in the broadest of terms, we find it extremely difficult to maintain a AA long-term credit rating on most electric utilities if coverage is sub-standard and does not show reasonably firm prospects for improvement to the *minimum* 3.0 to 3.5 times level. If pre-tax coverage is only 2.0 times or less on both an actual and a projected basis, we would seriously question whether the lower grade BBB debt safety cushions are so inadequate that only a relatively speculative grade BB rating can be assigned to a long-term issue. (Emphasis in original)

Recognizing that, *ceteris paribus*, increased bond ratings are a consequence of increased pre-tax coverage ratios, it is useful to investigate a coverage ratio calculation. The pre-tax interest coverage ratio is calculated as follows:

$$\text{Pre-Tax Interest Coverage} = \frac{\text{Net Income} + \text{Interest Expense} - \text{AFUDC} + \text{Income Taxes}}{\text{Interest Expense}}$$

AFUDC is the carrying charges incurred as a consequence of excluding CWIP from the rate base. Thus, a utility which is permitted to include all CWIP in rate base would have zero AFUDC and the pre-tax interest coverage would be higher than were AFUDC generated as a consequence of excluding CWIP from the rate base. Consequently, the inclusion of CWIP in the rate base will, *ceteris paribus*, lead to increased bond ratings. Borrowing costs are reduced as a consequence of these increased bond ratings. Recent differences in borrowing costs, classified by bond ratings, are as follows:

Moody's Average Bond Yields (%)

Moody's Rating	Aaa	Aa	A	Baa
1979	9.86	10.22	10.49	10.96
1980	12.30	13.00	13.34	13.95
1981	14.64	15.30	15.95	16.60
1982	14.22	14.79	15.86	16.45
March 1984	———	13.66	13.87	14.56

Question I-10: Would a no-CWIP in rate base policy bias utility planning decisions against large scale, efficient bulk power facilities?

Answer: It seems reasonable that a no-CWIP in rate base policy would tend to bias utility planning decisions against large scale, efficient bulk power facilities if the future resembles the economic and regulatory environment of the last ten years. This would be likely to occur for two reasons. First, if a utility can expect to earn a rate of return less than its cost of capital, additional capital investments tend to make shareholders less well off. To the extent that new capacity is added, the shareholders' interest would be best served by minimizing the capital investment. Second, a no CWIP in rate base policy can lead to a cash flow problem caused by the high cost of new base load plants in relation to a utility's rate base. From a practical financing standpoint, this situation would also create an incentive to minimize any investment in new capacity. Such a cash flow problem would be reflected in lay-offs of employees, cutting or omitting of dividents, plant cancellations and similar measures to conserve cash.

Question I-11: Does CWIP in rate base stimulate the construction of unneeded new facilities?

Answer: Construction of unneeded new facilities would only be stimulated if the utility were able consistently to earn more than its actual cost of capital (the so-called Averich-Johnson phenomenon). In fact, over the last ten years, utilities have consistently failed to earn their allowed returns. CWIP in rate base does not directly address the problem of such earnings attrition. Accordingly, it does not stimulate construction of unneded new facilities.

Question I-12: Why should ratepayers begin to pay now for facilities they will not receive the benefit of until a later date? Doesn't this result in an intergenerational inequity?

Answer: An intergenerational inequity may result if the ratepayers who share in the expenses of construction are not the same as those who receive the benefits of the plant's operation. Though such a result is contrary to the cost responsibility principle that would have benefits and burdens matched up, the Commission concluded that it was not possible to adhere to this principle with respect to the CWIP issue. But more important, the Commission determined that a departure from this principle was justified "to further the maintenance of an adequate and efficient electric utility industry." The inclusion of CWIP in rate base tends to promote this objective by helping management to gauge more accurately the need for future capacity, while alleviating the bias against additional investment. To the extent that CWIP in rate base reduces the cost of capital, customers are also benefitted.

Question I-13: Why does CWIP in rate base help send the appropriate price signals to customers?

Answer: CWIP in rate base helps to send the appropriate price signals to customers by providing a more accurate picture of trends in the cost of electricity. During a period when capacity costs are rising, such as occurred over the last decade, the pricing of electricity at average system costs tends to understate costs and thus rates. Since rates don't reflect the true cost to the utility of providing service, a customer receives a distorted price signal. By increasing present rates, CWIP in rate base informs customers of the increased costs of providing service to them. This in turn should tend to lead to more efficient consumption and investment decisions.

Question I-14: Is CWIP in rate base incongruent with the general public policy of having customers begin to pay for facilities only when they become "used and useful"?

Answer: CWIP in rate base is an exception to the "used and useful" doctrine, as generally understood. Strictly construed, that doctrine generally prohibits inclusion in rates of any costs related to facilities not operational and serving ratepayers, i.e., "used and useful." The "used and useful" doctrine is fundamentally an equitable concept that protects utility ratepayers from bearing burdens which will not also benefit them. While this is a laudable public policy, it is one that has historically been subject to varying interpretations and justifiable exceptions.

Even under a strict application of the "used and useful" doctrine, current ratepayers pay for facilities that were necessitated or justified by the demands of past ratepayers. They also pay the capital costs of unused capacity. The ratemaking methodologies of state and federal regulatory agencies reflect many ways in which ratepayers pay for expenses not directly related to the current production or distribution of electricity; for example, utility property held for future use is customarily includable in rate base. CWIP in rate base is another example.

Ratepayers have an interest in the facilities under construction to which they might contribute. The practical economic benefits of CWIP in rate base aside, ratepayers have a stake in the continued service reliability that is ensured by the construction of facilities necessary for the future. This question is also being reviewed on appeal of the Commission CWIP rule.

Question I-15: Does Order 298 result in a price squeeze for wholesale purchasers of electricity who are in competition with other utilities?

Answer: At this time, Order No. 298 CWIP has not been found to have been the cause of a price squeeze in any pending rate application. In Order No. 298, the Commission, relying upon the Environmental Assessment, stated that CWIP would probably not cause a price squeeze by itself. Accordingly, the Commission stated that it would handle the issue on a case-by-case basis. This aspect of the rule has been challenged on appeal.

Allegations of price squeeze have been made in a number of the CWIP applications which have been made. In all of these cases, the rate filings have been suspended and set for trial. The cases are presently in discovery. The first case is set to go to trial in the summer of 1984.

Question I-16: Does Order 298 reduce the incentives for utilities to look at alternative forms of power generation: e.g., conservation; load management; cogeneration; increased use of interties and exchanges; and less capital intensive means of power production?

Answer: Order No. 298 creates a regulatory environment which is more neutral in its impact on the investment decisions made by utility management. As such, Order No. 298 should not, in any meaningful way, reduce the incentives for utilities to look at alternative forms of power generation. Furthermore, Order No. 298 evidences the Commission's concern in this regard by requiring that a filing utility include an assessment of the relative costs of adopting alternative production plant strategies and an explanation of why the program adopted is "prudent and consistent with a least-cost energy supply program."

Question I-17: What impact would the three pending bills (S. 817; S. 1069; H.R. 555) have on:

a) electric rates (both wholesale and retail);

b) new facility construction costs;

c) the electric utility industry in terms of their:

  i) bond ratings;

  ii) interest rates;

  iii) stock value;

  iv) construction plans

Answer: a) The impact of any of the three bills on electric rates would be affected by the extent to which similar legislation was adopted at the retail rate level (regulated by the various states). The short run impact on retail rates would be a reduction in the rate of increase to those retail customers of utilities which purchase some or all of their electric power at wholesale -- about 1 in 13 retail consumers of electricity. Generally the rate of increase would be slowed by less than 5%.

b) It is unlikely, absent state legislatives following the lead of the Congress, that any of the three pending bills would have a significant impact on new facility construction costs, because of the generally small amount of FERC jurisdiction for most utilities. However, since the interest on capital used to construct new facilities would be added to the direct construction cost of such facilities when they are placed in service, assuming no CWIP is permitted by passage of any of the pending bills, there will be an increase in the total cost of the facilities when they are placed into service.

c) The impact of FERC's CWIP policy (as promulgated by the FERC or modified by Congressional action) upon company specific indicators depends upon the extent of FERC's regulatory jurisdiction over a particular electric utility. For some utilities, FERC's regulatory impact is only a minor percentage of the firm's total revenues. In such situations, it is likely that FERC's CWIP policy (i.e., either inclusion or exclusion from the rate base) will not significantly impact a utility's bond ratings, interest rates, stock value or construction plans because these factors are likely to be primarily affected by the policies of other regulatory bodies.

There are a number of utilities whose revenues are significantly affected by the regulatory policies of FERC. For these utilities, it is likely that items i)-iv) above will be affected by FERC's CWIP policies. Items i)-iv) will be discussed in terms of such a utility:

Bond Ratings - A utility's bond rating can be affected by a regulatory agency's CWIP policy. Bond ratings are positively correlated with pre-tax interest coverages, which themselves are impacted by the treatment of CWIP. Thus, the exclusion of CWIP from rate base may be expected to lead to lower bond ratings for some electric utilities. This is discussed in more detail in the response to Question Number 9.

Interest Rates - Interest rates paid on long-term debt are affected by the rating of a utility's bonds. Lower-rated bonds generally demand higher rates of interest than higher-rated bonds. Thus, the exclusion of CWIP from rate base may lead to higher interest rates paid by electric utilities. This is discussed in more detail in the response to Question Number 9.

Stock Value - Several studies have been performed which conclude that a relationship exists between a utility's CWIP policy and its market cost of common equity capital. Although difficult to precisely quantify, the general conclusion is that the market cost of common equity is increased by the exclusion of CWIP from rate base and, conversely, decreased by inclusion of CWIP in rate base. Most market models recognize the inverse relationship between the firm's market cost of common equity and its stock price -- *i.e.*, an increase in the market cost of common equity, *ceteris paribus*, leads to a decrease in the stock price. Thus, the inclusion of CWIP in rate base may raise a utility's stock price, and the exclusion of CWIP from the rate base may lower it.

Construction Plans - The dollar amounts a utility plans to expend for construction are primarily affected by: a) the current capacity and expected life of current equipment; 2) population and economic growth; 3) alternative sources of power; and 4) alternative technologies available to provide the required capacity.

If a utility is in a tight financing position, the inclusion of CWIP in rate base may generate sufficient amounts of cash to allow it to complete a planned construction program. Without this additional cash flow, the utility may find itself required to cut back or defer construction.

Alternatively, the utility may alter its construction plans to embark upon an alternative technology to provide the required capacity. The total cost of providing electricity is comprised of the fixed costs associated with the construction and financing of utility plant and the variable costs associated with its operation. The sum of the two, aggregated over the life of the plant, comprises the total cost of providing electricity. Generally, technologies with high fixed costs such as coal and nuclear have low associated variable costs. Technologies with low fixed costs such as gasoline turbines have higher associated variable costs.

Faced with cash flow problems exacerbated by exclusion of CWIP from the rate base, utilities may switch to generation technologies which, while nominally satisfying capacity needs, could offer lower up-front construction costs but higher operating costs than other technologies which may, over the life of the project, cost less.

Question I-18: Some have claimed that prior to Order 298, the FERC's experience with its CWIP policy was quite limited. They ask, how much insight into the industry's financial condition and the need for greater CWIP relief was gained by the FERC during this period? What is your response?

Answer: Over the approximately six years prior to Order No. 298 during which FERC operated under the "financial distress" standard, FERC trial staff participated in six electric utility CWIP cases. In all of these cases, the particular utility filing for the inclusion of CWIP in rate base was analyzed in relation to the electric utility industry average, and conclusions were drawn concerning the firm's riskiness relative to the average utility. Additionally, the remedy recommended by the FERC trial staff was based upon an in-depth analysis of the particular electric utility's cash flow positions both with and without CWIP in rate base.

These six CWIP cases constituted some of the most intensively scrutinized electric utility dockets the Commission has dealt with in the recent past. In the course of its analyses, the FERC trial staff, its administrative law judges and the Commission itself analyzed both the peculiarities of the filing utilities themselves and their relationships to the electric utility industry at large. This experience, combined with the record analyzed in the development of the "financial distress" doctrine, provided the Commission with extensive experience upon which to evaluate the effectiveness of the 1976 CWIP rule.

Question I-19: Some contend that the 50% CWIP inclusion rate established by FERC in Order No. 298 was not based on previous experience or on evidence presented during the rulemaking. What is your response?

Answer: The CWIP rulemaking proceeding generated a large record. Commenters submitted studies and statements on the rate impacts of various CWIP methodologies. In addition, Commission staff and the Department of Energy's Energy Information Administration conducted studies based on computer models. The studies in the record provided detailed information on the likely impacts on utility capital costs, cash flows, interest coverage ratios and other financial indicia, and the effect on wholesale and, insofar as possible, retail, ratepayers. The conclusions of the studies and the Commission's analysis of the results are detailed in the preamble of Order No. 298 as well as in the Commission's Environmental Assessment.

Contentions that the rule was inadequately supported are being reviewed by the D.C. Circuit Court of Appeals.

QUESTIONS SUBMITTED BY SENATOR J. BENNETT JOHNSTON

Question II-1: Please provide the Committee with a summary discussion of the reasons you believe that the public interest is better served by implementation of the 1983 FERC construction-work-in-progress (CWIP) rule as opposed to the regulatory regime that existed prior to the rule.

Answer: The reasons advanced by the Commission as to why the public interest is better served by implementation of the FERC's 1983 rule as opposed to the prior regulatory regime was set forth in Order No. 298 and the related order on rehearing. I concur in the Commission's reasoning in those orders.

Question II-2a: What percentage of electricity sales are covered by the FERC rule?

Answer: Approximately one-third of the sales regulated by FERC are requirements sales of the type which could be subject to Order No. 298, the Commission's CWIP rule. This amounts to approximately 12.3% of all sales by privately owned utilities, or 6.5% of sales by all private and public sources.

Question II-2b: If the full 6% per year rate increase were granted to all eligible applicants with ongoing construction programs, what would be the likely effect on retail electricity rates nationally?

Answer: The total increase attributable to CWIP currently sought by applicants totals $117,750,000. Nationally, privately owned utility retail rates totaled $97,331,644,000 in 1982. Thus totally allowed, the rate increases currently applied for would increase the 1982 retail revenue level by 0.12 percent.

Question II-3: How does the FERC rule provide for compensation for ratepayers who paid CWIP to a company that mismanaged a construction project into unwarranted cost overruns?

Answer: Order No. 298 does not change existing Commission practice that only prudently incurred expenses may be allowed in the calculation of just and reasonable rates. The Commission has consistently stated that it cannot, "consistent with its legal duties, approve passing through to jurisdictional ratepayers higher costs incurred as a result of negligence, mismanagement or inefficiency." Virginia Electric Power Company, Opinion No. 118, 15 FERC ¶ 61,052 at 61,112 (April 10, 1981), citing Public Service Company of New Hampshire, Opinion No. 37, 6 FERC ¶ 61,299 (March 30, 1979). Hence, only prudently incurred costs are allowed to be included as CWIP. The filing requirements established in conjunction with the new CWIP approach afford the Commmission an earlier opportunity to detect mismanagement than under an AFUDC approach where prudence is only evaluated after the project is completed. For a discussion of the impact of the 1983 rule on abandoned projects, see the response to Question No. II-9.

Question II-4: Why should present consumers of electricity pay financing costs for a facility that is not yet used and useful? Doesn't this force present ratepayers to subsidize future ratepayers?

Answer: Even under a strict application of the "used and useful" doctrine, current ratepayers pay for facilities that were necessitated or justified by the demands of past ratepayers. They also pay the capital costs of unused capacity. This serves to illustrate two points.

First, ratepayers are a community of persons that share economic interests and burdens over a period of time. Although recognizing that costs should generally be allocated among customers and over time in a manner that matches the cost burden with the benefit received, demographics and the evolution of a particular utility system may naturally and equitably result in deviations from that principle. Present ratepayers benefit from low-cost facilities installed for past ratepayers; ratepayers that move to new service areas frequently use facilities that represent contributions by other ratepayers. Just as the matching of costs and benefits may not be possible in all cases, there may exist other considerations that justify departures. Hence, the second point.

Utilities maintain unused capacity in reserve to serve customers in cases of emergency or fluctuations in demand. That reserve margin is based on the probability of outages and how much electricity must be available when customers use the most power. In addition, utilities must plan for increased future demand from current customers. Providing for such eventualities is a tricky business, but the goal is to provide service that is reliable. Ratepayers have an interest in the ongoing, year-to-year reliability of the utility's system. Moreover, inequities are less likely to occur, in any case, when CWIP costs are included in rates at the federally-regulated wholesale level where customers are institutions.

Question II-5a: Please explain the origin of the concept of "allowance for funds used during construction" (AFUDC). When allowance for funds used during construction becomes a significant percentage of the net income of an electric utility, as was the case in the 1970's, what is happening? In 1980 AFUDC was 46% of net income. What is the figure for 1981, 1982 and 1983? Is the trend in the share of income provided by AFUDC a cause for concern? Explain.

Answer: AFUDC evolved from interest during construction (IDC). IDC was first recognized as a cost of constructing utility facilities by the States of New York and Wisconsin as early as 1908. The Uniform System of Accounts adopted by New York stated:

> Charge to this account (Interest During Construction Undistributed Plant) the interest accrued upon all monies (and credits available on demand) acquired for use in connection with the construction and equipment of the property from the time of such acquisition until the construction is ready for use.

It should be noted that this calculation was limited to interest on debt securities. There was no allowance provided for equity funds.

The Interstate Commerce Commission adopted the concept of IDC in its Classification of Investment in Road and Equipment, 1914, in Account 103.76, Interest During Construction. The ICC's provision included an allowance on equity funds of the railroad and for construction.

The Federal Power Commission in its System of Accounts Prescribed for Licensees under the 1920 Federal Water Power Act set forth Account 394, Interest During Construction. This account, quoted below, was essentially the same as provided by ICC:

> 394. Interest During Construction
>
> When any bonds, notes, or other evidences of indebtedness are sold, or any interest-bearing debt is incurred, for acquisition or construction of plant and equipment, the interest accruing on the part of the debt representing cost of property chargeable to fixed capital accounts (less interest, if any, allowed or unexpended balances) after such funds become available for use and before the receipt or the completion or coming into service of the property so acquired, shall be included in this account.

> When such securities are sold at a premium, the proportion of such premium assignable to the time between date of the actual issuance of the securities and the time when the property acquired or the improvement made becomes available for service shall be credited to this account.
>
> This account shall include also such proportion of the discount and expense on long-term debt issued for construction purposes as is equitably assignable to the period between the actual issuance of the securities and the time when the property is acquired or the improvement made becomes available for service for which it is intended. The proportion of discount and expense thus chargeable shall be determined by the ratio between the period prior to the completion or coming into service of the facilities or improvements acquired or constructed and the period of the entire life of the securities issued.
>
> This account shall also include reasonable charges for interest during construction period on the licensee's own funds used temporarily during such period for construction purposes.
>
> When any of the items above enumerated can be charged or credited directly to the account for which incurred they shall be so charged or credited, and not to this account.

The first significant revision to the language of the FPC's IDC instruction was made following enactment of the Federal Power Act of 1935, which established Federal rate regulation of interstate wholesales of electric power. The FPC's Uniform System of Account Prescribed for Public Utilities and Licensees, 1937, stated:

> (17) " Interest during construction" includes the net cost of borrowed funds used during construction purposes and a reasonable rate upon the utility's own funds when so used. Interest during construction shall be charged to the individual job upon which the funds are expended and shall be credited to account 536, Interest Charged to Construction--Credit. The period for which interest may be capitalized shall be limited to the period of construction. No interest charges shall be included in these accounts upon expenditures for construction projects which have been abandoned.

Though the language was revised, the intent was the same as included in the 1922 system.

Under the provisions of the Commission's IDC instruction the utilities were allowed to capitalize the financing costs for construction of plant facilities. The capitalized charge included both the actual cost of debt and an allowance on equity funds.

Though the Commission had no prescribed formula for determining the IDC rate, the rate was generally limited to six percent.

By Order No. 436, dated August 9, 1971, the Commission split the income statement presentation of the allowance into the constituent debt and equity allowances rather than presenting a single income statement entry. At that time, IDC was renamed the Allowance for Funds Used During Construction (AFUDC); however, no formula was prescribed for calculation of the allowance.

By Orders No. 561 and 561-A, the Commission promulgated a formula approach in Plant Instruction 3, Components of Construction Cost, paragraph 17, Allowance for Funds Used During Construction, to be used in determining the maximum allowable AFUDC. The instruction included separate formulas for the debt and equity allowance. This approach is promulgated in the Commission's current Uniform Systems of Accounts.

When AFUDC becomes a significant percentage of net income, this generally reflects a large construction program relative to existing plant. The increase in AFUDC in the 70's reflected the undertaking of large projects requiring several years to complete. These projects were generally nuclear generating plants.

As the utility recognizes the AFUDC, it reduces its interest charges by the amount of the credit to Account 432, Allowance for Borrowed Funds Used During Construction - Credit. Additionally, the utility includes a credit to Account 419.1, Allowance for Other Funds Used During Construction, which represents the cost of equity funds utilized for construction purposes. The effect of these two components is to increase net income as compared to net income without recognition of the AFUDC.

The percentage of AFUDC to net income for the years 1981 through 1983 was:

Year	Percentage
1981	47.6
1982	47.9
1983	comparable data not yet available

Source: Standard and Poor's Compstat Services

There appears to be a downward trend developing in the level of AFUDC at the national level. This is in all probability due to the cessation or completion of work on existing generation facilities coupled with the flattening of construction expenditures on generation.

The percentage of income provided by AFUDC may be a cause of concern since it represents non-cash credits to income. Even though AFUDC is reflected on the company's balance statement as "income," because it is not cash income it cannot be used to pay employee salaries, construction contractors' monthly bills, or fuel suppliers.

To meet these regular expenses, the company must have cash. If internally-generated cash income is inadequate, then additional funds must be obtained either by borrowing or by issuing new stock. But if lenders or equity investors perceive an increased risk that loans may not be paid in full (or that dividends on equity may be cut), they will require a higher return on their investment, thereby increasing the cost of capital which must be borne by utility ratepayers. Any unnecessary increase in costs borne by ratepayers is cause for concern.

Following is a tabulation of major electric utilities showing more than 50 percent of earnings coming from AFUDC in 1983 (from the Annual Reports that have been filed):

Company	AFUDC % of net income
Arizona Public Service	70.8%
Carolina Power & Light	65.9
Central Maine Power	56.2
Central Vermont Public Service	50.7
Commonwealth Edison	69.2 1/
Consumers Power	69.4
Detroit Edison	95.0 1/
El Paso Electric	84.9
Georgia Power	57.6
Gulf States	55.3
Indiana & Michigan	82.5
Kansas City Power & Light	77.2
Kansas Gas & Electric	95.7
Kentucky Power	62.7
Long Island Lighting	65.1 1/
Louisiana Power & Light	75.2
Montaup Electric	103.0
New England Power	55.9
New York State Electric & Gas	58.5
Ohio Edison	70.9
Pacific Gas & Electric	52.9
Pacific Power & Light	83.6
Pennsylvania Power	58.0
Pennsylvania Power & Light	85.0
Portland General Electric	60.4
Public Service Co. of Indiana	86.6
Public Service Co. of New Hampshire	90.6
Puget Sound Power & Light	70.6
Southern California Edison	53.0
Toledo Edison	74.8
Union Electric	90.9
United Illuminating	81.3
Washington Water Power	58.3
Western Massachusetts Electric	61.2

It should be emphasized that the ratio of AFUDC to net income is only one indication of the financial health of a company and of its cost of capital.

1/ 1982 data.

Question II-5b: Provide the Committee with estimates of the trend in the return earned by U. S. investor-owned electric utilities with and without the AFUDC component of income. Is this trend a cause for concern? Explain.

Answer: Since the early 1970's, return on common stock equity has increased from the low to mid 11 percent range to more than 13 percent in 1982. However, the return on common equity without consideration of AFUDC has dropped from 8 percent to 6.5 percent in 1982. As indicated above, the AFUDC portion of net income continued to rise through 1982.

These trends may be a cause for concern to the same extent as the trends in the ratio of AFUDC to net income and for essentially the same reasons.

EARNINGS ON COMMON STOCK EQUITY BY ELECTRIC UTILITIES 1973 - 1983

- Earnings With and Without The Allowance for Funds Used During Construction -

($000,000)

	1983 2/	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973
Total Proprietary Capital 1/	121,385	127,674	114,016	104,483	95,164	87,367	79,836	71,957	64,573	57,187	51,674
Preferred Stock 1/	26,191	28,344	26,571	25,440	23,556	21,365	19,894	18,295	16,797	14,858	13,089
Common Equity	95,194	99,330	87,445	79,043	71,608	66,002	59,942	53,662	47,776	42,329	38,585
Average Common Equity 3/	95,194	93,388	83,244	75,326	68,805	62,972	56,802	50,719	45,053	40,457	36,337
Net Income 1/	15,709	15,167	12,730	10,676	9,478	8,717	8,009	7,194	6,198	5,297	4,986
Preferred Dividends1/	2,403	2,507	2,255	2,046	1,801	1,625	1,480	1,341	1,139	955	790
Net Income to Common	13,306	12,659	10,475	8,630	7,677	7,092	6,530	5,853	5,059	4,343	4,195
Earned Return on Common %	14.0	13.6	12.6	11.5	11.2	11.3	11.5	11.5	11.2	10.7	11.5
AFUDC 1/	6,370	6,569	5,254	4,403	3,598	2,747	2,257	1,859	1,645	1,531	1,237
Earned Return on Common Before AFUDC %	6.3	6.5	6.3	5.6	5.9	6.9	7.5	7.9	7.6	7.0	8.1

1/ Financial Statistics of Selected Electric Utilities 1982, source for data prior to 1983

2/ FERC Forms No. 1, Annual Reports, as filed with the Commission on May 11, 1984. The data is representative of the industry even though it is not complete.

3/ Common equity for 1983 is not presented as an average because certain Forms have not been filed and an industry average would be misleading.

Question II-5c: How does the 1983 FERC rule affect these trends?

Answer: By moving from deferred recovery of financing costs under AFUDC to current recovery of financing costs under CWIP, the rule essentially allows utilities to file to convert a portion of non-cash income into cash income. Accordingly, to the extent CWIP is included in rate base, this reduces the ratio of AFUDC to net income. This should increase the utilities' cash earnings, enhancing the quality of such earnings and reducing the cost of financings by the utilities. Further, the inclusion of CWIP in the rate base will raise the actual earnings on common stock equity from present levels by the reduction of the percentage of AFUDC in such earnings.

Question II-6: The American Public Power Association's testimony at this hearing contends (pp. 5-6) that the financial health of the nation's investor-owned utilities has improved in recent years and is now quite good. Would you comment on that?

Answer: The record in the CWIP rulemaking indicated that the decade of the 1970's was a period of generally declining financial indicators. While it is true that there has been an improvement in some of these indicators in recent years, it is doubtful whether the financial health of the electric utility industry as a whole can be characterized as "quite good." For example, about one-third of the industry still has bond ratings of triple-B or below, whereas very few had bond ratings this low in the early 1970's. Indeed, the financial health of a number of companies has deteriorated substantially in recent months, as indicated by the omission of dividends, laying off of employees, across the board salary reductions, and related developments.

Question II-7: What do you consider to be a reliable projection of required additions to U.S. electric generation capacity for the U.S. in order to meet the demand for electricity in 1990? in 1995? in 2000? How much of this increase in capacity is represented by nuclear powerplants now under construction? Now in the planning stages? How much by coal-fired powerplants now under construction? Now in the planning stages? Show separately the effects of retiring existing plants, the increase in the intensity of electricity use in the U.S. energy consumption mix, and constant-intensity growth in demand. Do you think historical practice in retiring plants will continue to apply? Why? Do you think historical trends in the electricity intensity of energy consumption will continue? Why?

Answer: The question presupposes that the FERC has endorsed as reliable some estimate of electricity demand in 1990, 1995 and 2000 with which a projection of capacity additions can be compared. The Commission does not forecast aggregate electric power requirements or generating capacity requirements of the U.S.

With respect to data regarding capacity presently planned or under construction, data made available by the North American Electric Reliability Council indicate that, as of 1983, some 45.6 gigawatts of coal capacity, planned or under construction, were scheduled to come on line between May, 1984 and December, 1990. An additional 15.8 gigawatts of coal capacity, planned or under construction, were scheduled to come on line between 1990 and 1992, the last year for which projections were available. Some 43.1 gigawatts of nuclear capacity were scheduled for completion during the 1984 - 1990 time period, and an additional 25.3 gigawatts of nuclear capacity were scheduled during the 1990 - 1992 period. Subsequent to the publication of these data, approximately 5 gigawatts of capacity under construction and due on line by 1990 have been cancelled.

The Council does not provide comparable data which project scheduled capacity retirements for these time periods.

Nor are the data broken down to reflect the portion of capacity to be constructed in order to meet any increase in intensity of electricity usage relative to other end-use energy sources. Similarly, the portion to be constructed to meet "constant intensity growth in demand" is not projected. It should be noted that the questions related to "intensity of electricity use in the U.S. energy consumption mix," would appear to apply only in the context of kilowatt-hour usage and therefore not have relevance to discussions bearing on kilowatt demand which determines capacity requirements.

With regards to generating capacity retirements, decisions to retire generating capacity are dependent upon unit-specific characteristics and include such considerations as comparative operating efficiency, relative fuel, operating and maintenance costs, and system reserve margins.

Similarly, it is not clear what is intended by the reference to "historical trends" with respect to "electricity intensity of energy consumption." For example, prior to 1976, electric consumption per constant dollar of GNP had been increasing, although at a diminishing rate. Subsequent to 1976, this measure of electricity usage intensity has been declining. Relative delivered costs for alternative end-use energy sources can be expected to determine the intensity of electricity usage as compared with other energy sources.

Question II-8: What will be the principal effects of the FERC 1983 rule on plants now under construction? What will be the principal effects of this rule on plants in the planning stage for which construction has not been begun? To what extent will the rule encourage utilities to undertake new construction projects? How critical to the meeting of projected electricity demand is the continued implementation of the FERC rule? Please justify your answer.

Answer: For the most part, the 1983 FERC CWIP rule will have little or no effect on plants under construction or in planning stages simply because the FERC's jurisdiction on the sales of most utilities is so small. For the same reason, the rule is not expected to affect most utility decisions to undertake new construction projects on an industrywide basis. See Tables 4.6 and 4.7 and accompanying text of Environmental Assessment Related to FERC Rule Amendment Regarding Inclusion of CWIP in Rate Base (copy attached). These answers reflect the practical limitations of the Commission's jurisdiction.

However, if one looks only at the FERC-jurisdictional portion of utilities, relatively speaking the CWIP rule should increase their cash flow and thereby increase their ability to obtain additional financing from the capital markets. As indicated by comments filed during the rulemaking proceeding if a utility is currently expected to earn less than its cost of capital (i.e., experience attrition) it will tend to be reluctant to go to the capital markets for new capital and thus tend to be biased in its investment decisions against capital-intensive technology (toward fuel-intensive technology). The rule should have the effect of decreasing the effects of this bias by reducing such utilities' dependence on external capital markets.

Because of the FERC's limited jurisdiction, one cannot say that continued implementation of the FERC rule is "critical" to the meeting of future electricity demands. One can say, however, that the CWIP rule reflects a fairly modest step towards adapting traditional regulatory doctrines to today's economic and financial circumstances, in a way that furthers the statutory goal of providing reliable, long-term power to customers at the lowest reasonable cost.

ENVIRONMENTAL ASSESSMENT
RELATED TO
FERC RULE AMENDMENT REGARDING
INCLUSION OF CWIP IN RATE BASE

MARCH 1983

Federal Energy Regulatory Commission
Office of Regulatory Analysis
825 North Capitol Street, NE
Washington, DC 20426

SUMMARY OF CONCLUSIONS

- The price impact of a 50% CWIP policy on wholesale customers would be highest in the early years of the policy change and diminish over time. One study--the EIA study--found that, nationally, the average price increase to wholesale customers would be 1.10%, 2.27%, 0.56%, and 0.69% in 1983, 1985, 1990, and 1995, respectively. This trend would also occur in each of the regions studied although the level of price impacts would vary. The initial impacts predicted by this study are biased downward. Another study--the FERC study--evaluated only initial impacts and found that the average initial impact would be about a 4.70% increase in wholesale prices with a wide variation among utilities. The estimated initial impacts of the FERC study overstate the true impacts. With the 6% ceiling on annual price increases attributable to CWIP during the first two years of the policy change, the average initial price increases predicted by the two studies would be reduced. With the 6% ceiling, the average price increase predicted by the FERC study would fall to 3.57%.

- It is estimated that nationwide only 1 in 13 retail utility customers--households and commercial and industrial establishments--would be affected by the Commission's rule change. Only 1 in 77 would experience an initial rate increase at about the 6% ceiling level. The proportion of retail customers affected would vary regionally. The impact on the retail customers of total- and partial-requirement wholesale customers would be different. The retail customers of total-requirement wholesale customers would experience impacts roughly comparable to those of the wholesale customers. The retail customers of partial-requirement wholesale customers would experience a lesser impact than the retail customers of total-requirement wholesale customers. The actual impacts on the different classes of retail customers would also be dependent upon the procedures used by state and local authorities for passing on wholesale rate changes to retail customers.

- In general, the financial condition of the FERC-jurisdictional portion of utilities would be measurably improved by a 50% CWIP policy. At the national level, the EIA study shows that internal cash flow would improve by an average of 5.38%, 9.69%, 4.18%, and 4.32% in 1983, 1985, 1990, and 1995, respectively. The FERC study shows a higher initial impact, i.e., an average increase of 13.08%. As indicated above, the initial impacts predicted by the EIA study understate the true impacts whereas those of the FERC study overstate them. There would be corresponding improvements in interest coverage and internal cash flow as a percent of construction expenditures. As with the price impacts, these impacts would vary widely among individual utilities and regions, depending upon the level of construction activity and its relation to rate base. The total company impacts would vary depending on the ratio of FERC-jurisdictional sales to total sales and to the extent that state and local commissions follow the FERC's CWIP policy

- Allowing CWIP in rate base would produce savings in financial costs to utilities although the magnitude of such savings is uncertain. This savings would occur either through reductions in the costs of debt and equity capital or through increased flexibility in timing and choice of security issuances.

- The Commission's final rule would affect utility investment decisions and fuel choices, although this impact would be small on an industrywide basis. This impact would vary among utilities in relation to the percentage of their sales regulated by the Commission. Under the scenario that the Commission allowed 100% CWIP in rate base and no state commissions followed this policy, only coal and turbine plant additions would be affected and to a relatively minor degree. If some state commissions followed the Commission's precedent such that utilities averaged inclusion of 50% CWIP in rate base, there would also be minor changes in oil-steam, gas-steam, and hydro plant addition categories. With regard to fuel choices, reductions in demand brought about by higher prices would generally reduce oil, gas, and coal consumption initially. Changes in fuel choice in later years would depend critically upon the relative prices of these fuels.

- Probable environmental impacts resulting from plant, fuel, and demand changes in response to the CWIP rule implementation would be negligible but predominantly beneficial, and would primarily result from a general decrease in demand and cut back in coal utilization in most regions. Environmental changes would not be detectable at a national level of analysis but could be at the regional or local level.

- The major socioeconomic impact of the FERC's final rule on CWIP would be the initial rise in the cost of electricity and thus the greater proportion of budgets allocated to electricity by those retail customers of utilities who purchase some or all of their electric power wholesale--about 1 in 13 retail consumers of electricity. The socioeconomic impacts to these consumers at the average national and regional level would be minor in terms of percent increases in rates, i.e., average national, regional, and individual utility rate increases would generally be less than 5%. Only about one-sixth of the affected retail customers--1 in 77 retail customers nationally--would experience the 6% ceiling on initial rate increases (assuming all jurisdictional utilities applied for and received the maximum CWIP allowance under the final rule). Socioeconomic impacts would be unequally distributed among and within customer classes and regions. A small number of households and businesses could be adversely affected, but overall regional and national effects would be insignificant.

- The impacts of a wide range of alternatives to the 50% CWIP rule were considered in this study. The impacts of alternatives considered varied both qualitatively and quantitatively from those of the 50% CWIP case.

1. INTRODUCTION

The Federal Energy Regulatory Commission (hereinafter referred to as the FERC or the Commission) regulates wholesale electric power rates. In August 1981, the Commission proposed an amendment to its regulations regarding the inclusion of construction work in progress (CWIP) in the rate base of public utilities under Commission jurisdiction. The Commission published a Notice of Proposed Rulemaking (NOPR), which focused on determining criteria for allowing CWIP in rate base to relieve the severe financial difficulty of a utility (Fed. Energy Reg. Comm. 1981a). Although the NOPR highlighted an approach based on determination of financial distress, it also outlined a number of alternatives of wider scope than financial distress that would be considered during formulation of the final rule by the Commission. The NOPR solicited public comments on the proposed rule and its alternatives, including submission of additional alternatives for Commission consideration.

Based on a comprehensive consideration of the comments regarding the NOPR and on an examination and study of the full range of CWIP and non-CWIP alternatives identified (including an analysis of the potential impacts), the Commission has decided upon a final rule that would allow all electric utilities regulated by the Commission to file to include in rate base up to 50% of their CWIP that is allocable to wholesale customers and that would otherwise be excluded from rate base. The amount of CWIP allowed would also be limited, during the first two years of the rule's effectiveness, by a ceiling of 6% per annum on the rate increase attributable to including this CWIP in rate base. This new rule would replace the existing financial distress standard and would supplement the existing provisions that allow rate base treatment for CWIP associated with pollution control and fuel conversion facilities (see Section 2.2).

The scope of the environmental assessment (EA), the depth of coverage, and the analytical approaches were all primarily determined by the range of alternatives included in the assessment and the available economic modeling capabilities. The range of alternatives includes all those identified in the NOPR, all reasonable alternatives suggested in comments to the Commission on the proposed rule change, and additional alternatives identified by the Commission staff during initial scoping of EA coverage. Alternatives examined basically include (a) the no-action alternative, (b) various CWIP alternatives based on utility financial distress, (c) CWIP alternatives not dependent on predetermination of financial distress, and (d) alternatives not involving CWIP.

The final rule would apply to electric utilities regulated by the Commission. The Commission regulates wholesale electric rates. Currently, 206 entities have rate schedules on file with the Commission (cf. Fed. Energy Reg. Comm. 1981a--46 Fed. Reg. 39453 [fn. 44]). Of these, 183 are Class A or B investor-owned utilities. Class A and B utilities are those having annual electric operating revenues of more than $2,500,000 and $1,000,000, respectively. The other 23 entities include 16 other investor-owned utilities, 3 industrially-owned, 2 cooperatives, 1 state agency, and 1 non-profit organization. These entities may be permitted, under the proposed rule, to include CWIP in rate base.

A second group affected by the final rule includes the customers in requirements sales transactions regulated by the Commission. The Commission sets rates for two types of wholesale transactions: requirements sales and coordination sales. The CWIP issue arises primarily in setting rates for requirements sales. Requirements sales involve the sale of electricity for resale from one entity to another where the latter either has no generating capacity of its own (total-requirement customer) or has an inadequate amount of generating capacity with which to meet its own customers' demands (partial-requirement customer). Capacity costs, such as CWIP, are not incurred by utilities in coordination sales. Coordination sales are sales of electricity between two or more utilities for purposes of improving efficiency and reliability or reducing costs. They typically involve short-term excess capacity and do not affect the seller's capacity expansion plans. In contrast, the level of a seller's capacity is determined in part by its projections of wholesale requirements sales.

For Class A and B electric utilities, revenues from requirements sales constitute less than 8% of total revenues from all sales of electricity.* On a revenue basis, the split between total- and partial-requirement customers is about fifty-fifty. Some additional statistics on requirements sales by Class A and B utilities for 1977 (the latest year for which these data were compiled by EIA) are presented in Table 1.1. There were 1090 total-requirement and 620 partial-requirement customers. The average total-requirement customer spent $2.2 million annually on purchases of electric power for resale whereas partial-requirement customers spent an average of $3.5 million annually.

Indirectly affected by the proposed rule are the retail consumers of the wholesale customer utilities. Assuming that the proportion of retail consumers affected is the same as the proportion of electric revenues affected (8%), it is estimated that nationwide up to 1 in 13 retail consumers--residential households and commercial and industrial establishments--could be affected by the Commission's action depending upon the number of jurisdictional utilities that request and obtain rate base treatment of CWIP. Approximately half the potentially affected retail consumers obtain their electricity from total-requirement wholesale utilities and half from partial-requirement wholesale utilities.

During preliminary evaluations by the Commission staff of the potential ramifications of implementation of any of the range of alternatives considered

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*This is based on data for 1977, the last year for which requirements sales data were compiled (Energy Inf. Admin. 1977). The 8% value was determined by dividing requirements sales revenues by the sum of revenues from sales for resale and revenues from sales to ultimate consumers. Because of data limitations, the denominator excludes a substantial portion of resale revenues derived from coordination sales. Inclusion of revenues from these sales in the denominator would necessarily result in a lowering of the percentage figure below 8%.

Table 1.1. Characteristics of Sales to Requirements Customers by Class A and Class B Electric Utilities--1977

		kWh Sales		Revenues	
	Number of Customers	Per Customer (MM kWh)	Percent of Total	Per Customer (Mil. $)	Percent of Total
Total-Requirement Sales					
Assoc. Utilities	27	962.5	25.9	$27.5	30.4
Non-Assoc. Utilities	135	96.3	12.9	2.2	12.3
Municipals	699	52.6	36.6	1.2	34.2
Cooperatives	229	107.8	24.6	2.5	23.1
Total	1090	92.2	100.0	2.2	100.0
Partial-Requirement Sales					
Assoc. Utilities	81	530.6	39.7	9.2	34.3
Non-Assoc. Utilities	166	165.8	25.4	3.6	27.6
Municipals	243	69.8	15.7	1.6	18.2
Cooperatives	130	160.2	19.2	3.3	19.9
Total	620	174.7	100.0	3.5	100.0

Source: Energy Information Administration (1977--pp. 1300-1302).

for the rule change, it was evident that impacts would be primarily economic--e.g., effects on utility financial condition and effects on electric rates to customers. Impacts on environmental quality and socioeconomic conditions would be secondary- or tertiary-level effects related to changes in the amount of power generated (in response to demand changes) and/or changes in plant type and fuel mix, all determined primarily by the primary economic impacts (positive or negative) to utilities and ratepayers. It was also evident that although many of the primary economic effects could be quantified (at least in an aggregate or average manner), environmental and socioeconomic impacts could only be dealt with qualitatively in a generic, and at best, regional-level discussion due to the lack of adequate data bases. Therefore, the basic approach utilized in this EA to evaluate potential environmental and socioeconomic impacts was to tier the primary economic impacts (and subsequent secondary utility impacts) and the resulting environmental and socioeconomic effects such that the latter qualitative analyses are based on quantified estimates of incremental changes in generation mix and electric rates, respectively.

The following sections describe and evaluate the proposed action in terms of background; alternatives considered; and probable economic, environmental, and socioeconomic impacts of the range of alternatives identified.

2. FINAL RULE

2.1 BACKGROUND OF FINAL RULE

Growth in electricity demand and the need to replace existing capacity, due to both obsolescence and the need to reduce oil consumption, continue to create significant demands on the electric utility industry for new capital. Moreover, compared with net plant-in-service, CWIP has increased from 17% in 1970 to 40% in 1979. Concurrently, electric utility bond ratings and market-to-book ratios have generally declined. As a result, the electric utility industry has experienced an overall decline in its ability to meet capital needs.

The Commission's historic policy regarding CWIP generally prohibited inclusion of CWIP in rate base until the facilities involved became "used and useful", i.e., until the facilities were in operation. This policy implied that no payment would be made by customers toward construction costs of new facilities until the units were in use. However, as construction costs rose and construction periods lengthened over the last decade, the burden of meeting the carrying charges associated with construction has increased. These carrying charges are accounted for in financial statements as AFUDC (allowance for funds used during construction), but cash payments by ratepayers to cover these charges begin only when the completed plant goes into operation. When CWIP is allowed in the rate base, the utility recovers its current carrying charges from ratepayers through increased rate charges during construction, rather than adding them to the cost of construction for later recovery when the facility is completed. It was the effects of large (monetarily) construction programs on the financial health of utilities that caused the Commission to reexamine its position with respect to inclusion of CWIP in the jurisdictional rate base.

In 1976, the Commission promulgated new regulations (Order No. 555; Fed. Power Comm. 1976, 1977) that provided three exceptions under which CWIP could be allowed in the rate base: (1) for construction of pollution control facilities, (2) for construction of fuel conversion facilities, and (3) for certain other situations where the utility is in severe financial difficulty which cannot be otherwise alleviated without materially increasing the cost of electricity to consumers. However, only if financial distress is clearly and convincingly demonstrated would the Commission include some amount of CWIP in rate base for relief of that financial distress.

The first two provisions have had little impact on utilities. The third provision for inclusion of CWIP in rate base produced protracted and complex litigation. Three such proceedings lasted for more than three years. Furthermore, this provision has been rarely used, in spite of the fact that the financial condition of the U.S. utility industry has generally deteriorated during the period of time that Order No. 555 has been in effect.

It is within this framework of events that the Commission concluded that the current regulations may not be an effective instrument for the relief of financial difficulties of utilities. In tbe NOPR, the the Commission proposed to amend its regulations regarding the inclusion of CWIP in rate base. The NOPR presented a specific proposal relating to financial distress and noted an array of alternative policies that would be considered. The Commission sought comments on all alternatives identified in the NOPR and solicited identification of additional alternatives for consideration in the final rulemaking.

The NOPR prominently discussed a policy that would allow CWIP in rate base to relieve a utility's severe financial distress. This approach would establish more precise criteria for (1) determining whether a utility qualified for the inclusion of CWIP in rate base under various circumstances and (2) establishing the amount of CWIP that a qualifying utility could include in the rate base. A two-pronged test was proposed. This test employed the utility's bond ratings and the ratio of CWIP outside of rate base to rate base. It was proposed that a utility would be eligible to include CWIP in rate base if the utility had a bond rating of BBB or lower and CWIP outside of rate base greater than 40% of rate base.

The Commission emphasized that the proposed rule based on financial distress represented a "preliminary attempt to provide a practical framework to handle the CWIP issue" (Fed. Energy Reg. Comm. 1981a--46 Fed. Reg. 39452). The NOPR stated that the Commission intended to seriously consider alternatives of broader scope than financial distress as a basis for allowing CWIP in rate base, including eliminating any presumption that CWIP should not be included in the rate base.

2.2 SUMMARY OF FINAL RULE

The final rule to be promulgated by the Commission regarding inclusion of CWIP in rate base is summarized as follows:

(1) All electric utilities regulated by the Commission would be allowed to file for rates based on inclusion in jurisdictional rate base of up to 50% of jurisdictionally allocable CWIP that would otherwise have been excluded from rate base.

(2) For the first two years after the rule's enactment, there would be a ceiling of 6% per year on the rate increase attributable to including CWIP in rate base under this rule.

(3) The new rule would supplement, not replace, existing provisions for including in jurisdictional rate base all jurisdictionally allocable CWIP associated with pollution control and fuel conversion facilities.

(4) For purposes of this rule, nuclear fuel in process is included within the definition of CWIP.

(5) The rule requires cessation of AFUDC capitalization on that amount of CWIP allowed in rate base.

3. ALTERNATIVES EXAMINED

3.1 NO-ACTION ALTERNATIVE

The no-action alternative would involve no action on the Commission's part, i.e., the Commission would continue the status quo by withdrawal of the proposed rule change. Existing regulations would then continue to determine the extent of CWIP allowances in the rate base of jurisdictional utilities.

3.2 ALTERNATIVES THAT WOULD ALLOW INCLUSION OF CWIP IN RATE BASE

The following alternatives would not be dependent on predetermination of financial distress and could be used by the Commission to determine a CWIP allowance.

(1) Allow a Uniform Percentage of CWIP Other Than 50% as Included in the Final Rule. The current analysis examines alternative allowances up to 100% CWIP in rate base to determine the range of potential impacts.

(2) Allow a Uniform Percentage of New CWIP Only. These alternatives would serve to phase in the alternatives under (1) above by allowing rate base inclusion of some percentage of new construction expenditures.

(3) Allow Debt or Equity Expenses Associated with CWIP. These alternatives would allow only construction-related interest or equity return costs or some combination of these costs to be recovered in rates on a current basis.

(4) Allow CWIP Based on Some Percentage of Rate Base. These alternatives would allow CWIP up to some percentage of rate base or allow all CWIP in excess of some percentage of rate base.

(5) Allow CWIP Only as State Commission Policy Allows. This alternative would allow CWIP in rate base up to a level consistent with the utility's predominant state regulatory authority.

3.3 CWIP SCREENING ALTERNATIVES

Several alternatives to the two-pronged screening test proposed in the NOPR are examined.

(1) The first-prong test proposed in the NOPR would be used to determine financial distress. The following alternatives for determination of financial distress are considered: bond rating, actual and hypothetical before-tax interest coverage ratios, market-to-book ratio, and internal cash flow to total sources of fund ratio.

(2) The second-prong test proposed in the NOPR would be used to determine the extent of CWIP influence on financial health and the amount of CWIP allowance after the first-prong test was passed. The following second-prong alternative is analyzed: percentage of jurisdictional CWIP excluded from the rate base to the utility's jurisdictional rate base.

3.4 NON-CWIP ALTERNATIVES

The following non-CWIP alternatives are examined: contributions in aid of construction, capital certificates, and allowance of higher rates of return.

4. CONSEQUENCES OF FINAL RULE AND ALTERNATIVES

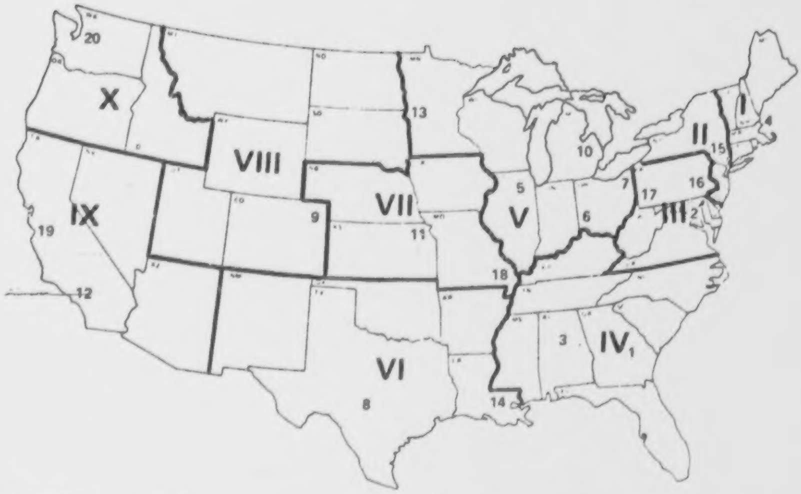
4.1 SCOPE AND METHODS OF IMPACT ANALYSIS

The alternatives proposed for consideration by the Commission are varied and even extend beyond the inclusion of CWIP in rate base (e.g., contributions in aid of construction). The primary focus of this study is the proposed action: including 50% CWIP in rate base. All alternatives are evaluated quantitatively or qualitatively, to the extent possible, by reference to this proposed action.

The principal aim of regulatory policies is to achieve a fair price of electricity for customers and to provide investors with an adequate rate of return that will enable the electric utility to raise enough capital to meet the future expansion needs of its service territory. Hence, the impacts of the proposals considered in this assessment are presented within the context of how they affect the average price of electricity and the financial condition of the utilities. Because the Commission directly affects the price of electricity to wholesale customers and indirectly to retail customers, both price impacts are considered. Because the industry's ability to finance needed construction at a reasonable cost currently and in the future is dependent upon its cash flow relative to its construction budget, measures of financial health are presented. These include the percent change in internal cash flow, internal cash flow as a percent of total sources of funds, internal cash flow as a percent of construction expenditures, interest coverage ratios, and rate of return on common equity. The effects of the proposal on plant construction choice, operating fuel mix, and the demand for electricity are also presented. The effects on plant construction choice and operating fuel mix are utilized for an assessment of the environmental impacts. A discussion of socioeconomic impacts based on the price impacts of the proposal is also presented. Finally, an evaluation is made of the effects of the proposal on the question of price squeeze.

Impacts of the regulations are evaluated on the regional as well as the national level because average regional impacts may vary due to differences in economic and demographic variables of the regions, and regional differences may not be evident in the national average. Unless otherwise specified, regional analyses in this EA are based on the 10 energy regions defined by DOE (Figure 4.1). Regional differences in projected growth patterns of electricity consumption, in dependences on different fuel resources, and in costs of new plant construction and equipment result in unique financial characteristics for the utilities of these various regions.

The Commission is concerned primarily with determining the impacts its actions will have on the jurisdictional operations of the utilities it regulates and on the wholesale customers of these utilities. Traditionally, the extent of the Commission's jurisdiction has been measured by the percentage of



	REGION*	STATES	CITIES
I	NEW ENGLAND	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	(4)Boston
II	NEW YORK/ NEW JERSEY	New Jersey, New York	(15)New York City
III	MIDDLE ATLANTIC	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia	(2)Baltimore (16)Philadelphia (17)Pittsburgh
IV	SOUTH ATLANTIC	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee	(1)Atlanta (3)Birmingham
V	MIDWEST	Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin	(5)Chicago (6)Cincinnati (7)Cleveland (10)Detroit (13)Minneapolis
VI	SOUTHWEST	Arkansas, Louisiana, New Mexico, Oklahoma, Texas	(8)Dallas (14)New Orleans
VII	CENTRAL	Iowa, Kansas, Missouri, Nebraska	(11)Kansas City (18)St. Louis
VIII	NORTH CENTRAL	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming	(9)Denver
IX	WEST	Arizona, California, Hawaii, Nevada	(12) Los Angeles (19) San Francisco
X	NORTH WEST	Alaska, Idaho, Oregon, Washington	(20)Seattle

*Regions defined by DOE in the EIA Annual Report to Congress, Vol. II, 1977. (Analysis does not include Alaska and Hawaii.)

Figure 4.1. Regions Used for Cost Comparisons.

total electric revenues derived from sales for resale by Class A and B privately owned electric utilities. By this measure, although the Commission has jurisdiction over all sales of a few utilities, it regulates about 11% of electric sales nationally (using data for the period 1976 through 1980). This measure and the 11% value were used in evaluating various impacts of the CWIP rule in this report.

It should be noted, however, that although this measure has become part of the conventional wisdom of FERC regulation, as indicated earlier (see Section 1), it overstates the extent to which the final CWIP rule would affect utility rates.* The allowance of CWIP in rate base under the final rule would primarily affect requirements sales. When measured by requirements sales revenues rather than sales for resale revenues, the extent of electric sales affected by the Commission's CWIP rule would be less than 8%.

Rather than disaggregating company data to obtain jurisdictional costs and revenues for purposes of evaluating the CWIP policy impacts, a different approach is taken here. The effects of allowing different levels of CWIP in rate base are evaluated on whole-company, regional, and national bases. The quantifiable impacts of the proposed action are based primarily on an evaluation of two scenarios: a base (or status quo) case and a uniform inclusion of 50% CWIP in rate base. These effects are presented as percent changes and ratios indicative of the impacts on the FERC-jurisdictional portion of the utilities' operations (assuming a proportional allocation of costs and revenues). In other words, although estimated on the basis of statistics for whole companies, these statistics are estimates of the impacts on the FERC-jurisdictional portion of the companies' operations. For example, the estimated percentage increases in rates are applicable to FERC-jurisdictional sales as well as to whole-company sales (assuming state and local authorities were also to adopt the same rule on CWIP. To the extent possible, the impacts of alternative policies are evaluated by reference to the impacts estimated in this analysis of the 50% CWIP case.

In the evaluation of impacts on utility investment and fuel choice decisions, a "base plus 11% CWIP case" is presented. This case provides an estimate of the effect that a Commission policy of allowing 100% CWIP in rate base for only jurisdictional sales would have on the total industry's planning decisions. A CWIP policy allowing inclusion of a smaller percentage, such as 50%, in the rate base would have a lesser impact. However, in either case, planning decisions are not made separately for wholesale and retail operations. Rather they are influenced by overall company conditions for which the Commission, on average, has a relatively small impact due to its limited jurisdiction. As suggested above, since the rule would primarily affect requirements sales, which constitutes less than 8% of all sales, the use of 11% in this study biases the results upward.

For estimates of quantifiable impacts on utilities and customers, the current analysis relies extensively on two empirical studies: (1) the Energy

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*This measure also understates the extent of the Commission's jurisdiction since the sales for resale data excludes a substantial portion of the coordination sales between utilities.

Information Administration (1982a, 1982b) study, and (2) the Federal Energy Regulatory Commission (1981b, 1982) study.* These studies are hereinafter referred to as the EIA study and the FERC study.

4.1.1 EIA Study

The EIA study uses the Midterm Energy Forecasting System (MEFS) and the National Utility Financial Statement (NUFS) models to evaluate the impact of including various percentages of CWIP in rate base. The MEFS is a national forecasting model, which provides the Department of Energy's midterm (5- to 15-year) integrated forecasts and analyses. MEFS is used to forecast energy prices, supplies, demands, and conversion activities. As an analytical tool, it helps examine the potential impact of changes in federal policies by using alternative scenarios reflecting the appropriate world oil prices, tax and regulatory conditions, and other variables. MEFS can examine differing resource and technological option assumptions and the comparative impacts of differing political, tax, and regulatory environments. The NUFS model is essentially a financial accounting model for the electric utility industry. From a base year, it incorporates the financial implications of individual plant additions for succeeding years. The plant additions information is obtained from the MEFS Model. NUFS forecasts operating characteristics and calculates financial statements utilizing the forecasted values, as well as various scenario parameters. The model can simulate alternative impacts on the financial statements of an electric utility based upon assumptions about regulatory climate and capital cost. (A more comprehensive description of the MEFS model is included in the EIA 1981 Annual Report to Congress [Energy Inf. Admin. 1982a]; the NUFS model is described in the reports of ICF Incorporated [1982a].)

The EIA study analyses are done on a regional and national basis for 1982 through 1995. Specifically, the MEFS and NUFS models are used to compare the effects of immediate (1982) nationwide inclusion of 50% CWIP in rate base to a continuation of the status quo. The status quo (base) case reflects the combined inclusion of varying amounts of CWIP in rate base among the regions based upon 1981 data (ICF Inc. 1982b). Nationally, it is estimated that in 1981 approximately 15.4% of CWIP was allowed in rate base by state regulatory commissions without an AFUDC offset and 12.5% with an AFUDC offset.**

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*The following documents are available in the Office of Public Information (Room 1000, 825 North Capitol Street, N.E., Washington, DC 20426): (a) Results from the EIA study; (b) EIA's 1981 Annual Report to Congress (four volumes); (c) User manuals for the NUFS model used in the EIA study (three volumes); (d) The FERC computer model; and (e) Results from the FERC study.

**Allowing CWIP in rate base with an AFUDC offset means that, in setting rates, cost of service would include a return on CWIP equal to the difference between the overall allowed rate of return on rate base minus the AFUDC rate. For example, if the allowed rate of return is 10% and the AFUDC rate is 7%, allowing CWIP in rate base with an AFUDC offset would mean that rates reflect CWIP getting a 3% return. The remaining 7% would be capitalized on the company's books and reflected in rates during the plant's operating life. For Regions I through X, the base case assumes that 9.8%, 25.0%, 14.0%, 13.9%, 15.7%, 36.7%, 0.1%, 42.6%, 1.2%, and 0.3% of CWIP is included in rate base, respectively, with no AFUDC offset (see Figure 4.1 for definitions of regions.) No CWIP is assumed to be in rate base with an AFUDC offset in the base case since the AFUDC rate is assumed to equal the overall allowed rate of return on rate base.

The process of evaluating various CWIP policy options involves computing initial price implications of each CWIP policy with the NUFS model, given a base set of capacity expansion plans. These prices are then fed into the MEFS model to determine the effects on the demand for electricity. These demand effects lead to revised capacity expansion plans. Using these revised plans, the NUFS model is again used to compute the price implications of the CWIP policy and these revised prices are fed into the MEFS model. This process is repeated until a market equilibrium is achieved, with the final CWIP-based prices being consistent with the final capacity expansion plans. In this way, the demand feedback effects of CWIP policy changes are reflected in the impact analysis.

Some important policy assumptions of this study are: (1) a one-year regulatory lag; (2) ratable flow-through of investment tax credits (ITC); and (3) where applicable, 30% of the tax effects of AFUDC (allowance for funds used during construction) interest is flowed through in each region. Important financial parameters include: (1) the specification of a constant capital structure for each region beginning in 1985 of 50% long-term debt, 3% short-term debt, 12% preferred equity, and 35% common equity; (2) a constant dividend-payout ratio of 70%; (3) an AFUDC rate equal to the overall cost of capital/allowed rate of return; and (4) identical costs of capital under all scenarios. It should also be noted that the NUFS model incorporates the changes in federal tax regulations brought about by the Economic Recovery Tax Act of 1981.

4.1.2 FERC Study

The FERC study relied on a computer model specifically designed to estimate the impacts on utilities and customers of allowing some or all CWIP in the rate base. This computer model is a revision of the model published in the Federal Register for this rulemaking (Fed. Energy Reg. Comm. 1981b--46 Fed. Reg. 58148). The major revisions made in the model are as follows:

(1) The model was revised to accommodate evaluation of the impacts of inclusion of uniform percentages of CWIP (rather than amounts of CWIP exceeding a specified percent of rate base as reflected in the two-pronged screening alternative in the Notice of Proposed Rulemaking [NOPR]).

(2) Additional impact measures were added: interest coverage ratios and an internal cash flow ratio.

(3) A correction was made in the calculation procedure of the incremental effect of CWIP on cash flow.

The FERC study produced initial-year impacts for individual utilities as opposed to the multiyear impact estimates for regions and the nation produced by the EIA study.

The model was originally developed to evaluate the specific CWIP policy proposed in the NOPR where utilities are screened on the basis of certain financial criteria and the CWIP allowance is determined by the amount of CWIP a utility has in excess of a specified percent of rate base. The FERC model has been revised to also compute, for all utilities, the impact of including a specified percentage of CWIP in rate base on revenue requirements, cash flow, interest coverage (actual and hypothetical), and internal cash flow as a percent of total sources of funds. The model also computes the mean, standard deviation, and high and low values for each of these impacts.

The evaluation procedure used by the FERC model involves computing the incremental effects on rates, cash flow, and certain financial ratios that would have occurred had, for example, 50% CWIP been included in the rate base. It assumes that demand remains the same even though prices rise due to the rate base treatment of CWIP. Other important assumptions are (1) the tax effects of AFUDC are normalized, and (2) the allowed rate of return/cost of common equity to each company is inversely related to bond rating.* The model was applied to data for the years 1977 through 1981. Because no significant differences were found among the years examined and because 1980 was the latest year for which substantially complete data were available, this study relied on the results for 1980 as indicative of likely impacts of alternative CWIP policies.

4.1.3 Appropriateness of the Models for this Study

Because of inherent limitations imposed by assumptions and data bases, a single model would not provide sufficient data to permit a rigorous evaluation of the major impacts of the proposed action and the alternatives. For example, the MEFS and NUFS models provide impact estimates only at the national and regional levels. Individual company impacts cannot be determined. Furthermore, these models are limited in the range of policy options they can examine; for example, they cannot be used to evaluate a policy that involves screening companies because they do not work at the individual company level.

The FERC model is best suited for an impact evaluation of screening options, but because of its limited ability to give only initial-year impact estimates, it cannot be used by itself to forecast the total impacts of the various regulatory alternatives. Furthermore, the FERC model does not account for the demand feedback of price changes resulting from changes in CWIP policies. The MEFS and NUFS models reflect the demand feedback effects of price changes brought about by changes in CWIP policies.

4.1.4 Other Studies

A number of other studies on the impact of CWIP policies are currently available, including: (1) Southwest Energy Associates, Inc. (1982), (2) Argonne National Laboratory (1982), (3) Appalachian Power Company et al. (1982), and (4) Oglethorpe Power Corporation et al. (1981). A summary of these studies is presented in Section 4.4.

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*The risk classes and allowed rates of return/cost of common equity assumed in the study for 1980 were as follows: AAA+ to AA-, 13.2%; A+ to A-, 14.2%; BBB+ to D, 15.2%.

4.2 IMPACT OF THE FINAL RULE: 50% CWIP IN RATE BASE

4.2.1 Impact on Customers

The results of EIA's study of the impacts on prices of electricity to those customers affected by the rule due to the immediate inclusion of 50% CWIP in rate base are presented in Table 4.1. Rates are generally higher throughout the period examined, whereas price impacts appear greatest in the early years of the policy change and diminish over the period studied (Figure 4.2). Nationally, the rate impact of a 50% CWIP policy decreases from 1.10% in 1983 and 2.27% in 1985 to 0.56% in 1990 and 0.69% in 1995. Although the CWIP policy is assumed to take effect in 1982 for this study, no significant changes occur until 1983, presumably because of the assumpion of a one-year regulatory lag. As explained below, the impacts estimated in the EIA study are biased downward, at least in the initial years.

On the regional level, the CWIP-based prices would generally be higher throughout the period examined, but two regions--New England and West--would experience a decline in rates in 1990 and 1995 according to the EIA study (see Table 4.1). The regional price impact would have a wide variation. For example, in 1983, the Northwest region would experience a 5.17% initial increase and the Southwest region virtually no initial increase. The variations in impacts across regions result from variations in current and forecasted construction activity and the relation of this activity to the rate base in the corresponding periods.

The trend of greater price impacts in the early years and lesser impact in the long term is explained by the relative magnitudes of the two major fixed-cost differences between the CWIP-based rates and the base case (non-CWIP) rates. For a single plant, allowing CWIP in rate base means that the carrying costs (and associated taxes) of financing its construction would be included in rates during the construction period. However, this would result in a lowering of the depreciation, return, and tax costs associated with the plant when it went into service. Allowing CWIP in rate base simply changes the time pattern of recovery for plant costs. Thus, in comparing the CWIP-based rates with the base case, the CWIP-based rates would be higher initially due to inclusion of the construction-related carrying costs in the rates. However, over time, the lower costs of the plants when they are placed in service would offset the carrying costs of new plant construction so that CWIP-based rates would move closer to the base case rates. Whether CWIP-based rates would eventually fall below the base case rates depends upon the growth rate in new plant additions.

Changes in average variable costs (especially fuel) would also affect the time pattern of 50% CWIP prices relative to the base case prices. As the increased prices with CWIP in rate base reduces demand, there would be a concomitant reduction in the use of oil and gas--the marginal and most costly fuels--in the generation of power (see Table 4.7). The greatest decrease in the use of these fuels relative to the base case would appear in the early years of the policy change.

The FERC model was used to derive initial-year price impacts for a 50% CWIP policy. Impacts were calculated for 1980 from an analysis of 141 electric utilities. The mean initial-year price impact of a 50% CWIP policy to those

Table 4.1. Impact on Customers of Allowing Uniform 50% CWIP in Rate Base

Region	1983	1985	1990	1995
		% Change in Price*		
Nation	1.10	2.27	0.56	0.69
New England	1.84	4.30	-1.41	-0.76
New York/New Jersey	0.36	0.85	0.44	0.60
Middle Atlantic	0.76	1.65	0.13	0.47
South Atlantic	1.64	2.63	0.84	0.48
Midwest	1.35	2.19	0.37	1.29
Southwest	NC**	0.30	0.82	0.69
Central	2.58	4.45	4.07	2.98
North Central	0.79	1.10	0.30	-0.47
West	3.73	3.49	-0.26	-0.23
Northwest	5.17	6.65	-0.92	4.36
		% Change in Demand*		
Nation	-1.42	-1.98	-0.84	NC
New England	-1.23	NC	1.06	NC
New York/New Jersey	NC	-0.80	0.71	0.58
Middle Atlantic	NC	-2.36	-0.66	0.27
South Atlantic	-1.57	-2.06	-0.97	-0.19
Midwest	-2.67	-3.34	-1.79	0.43
Southwest	NC	-0.35	-0.30	-0.22
Central	-2.25	-2.19	-2.10	-0.82
North Central	NC	NC	NC	0.95
West	-1.25	-1.71	0.51	0.44
Northwest	NC	NC	NC	1.85

*Calculated over the base case.

**NC = Negligible change.

Source: Energy Information Administration (1982b).

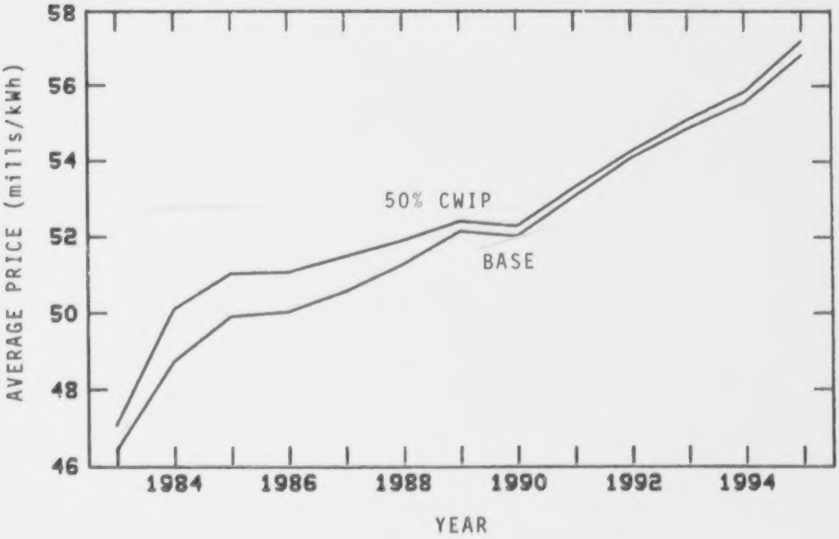

Figure 4.2. Real National Average Price of Electricity: EIA Study.

customers affected by the policy was an increase of 4.70% with a standard deviation of 4.04%. The largest impact on an individual utility (as opposed to an entire region in the EIA study) in the sample was 16.56% and the smallest impact was 0.02%. The distribution of the impacts is shown in Figure 4.3. As explained below, these impacts are biased upward. It should also be noted that with the 6% ceiling on initial rate increases per the final rule, the distribution of impacts (Figure 4.3) would have no companies beyond 6%. In other words, the 44 companies predicted in the FERC study to have initial increases in excess of 6% would be added to the 12 companies predicted to have increases in the 5-6% range in Figure 4.3.

The initial impacts, on a national basis, obtained from the EIA study appear somewhat lower than the average initial impacts obtained from the FERC study. Since the methods used in the EIA and FERC analyses are substantially dissimilar, the explanation for these differences may not be self-evident. Further, in designing the studies, certain assumptions were made that on hindsight are inappropriate to the goals of the study. The following discussion attempts to explain the differences in results between the EIA and FERC studies and to assess the likely biases in the impact estimates due to inappropriate assumptions or inadequate data.

First, the EIA study relies on regional analyses, and some intercompany variability (evidenced by the results of the FERC study) may not be evident in

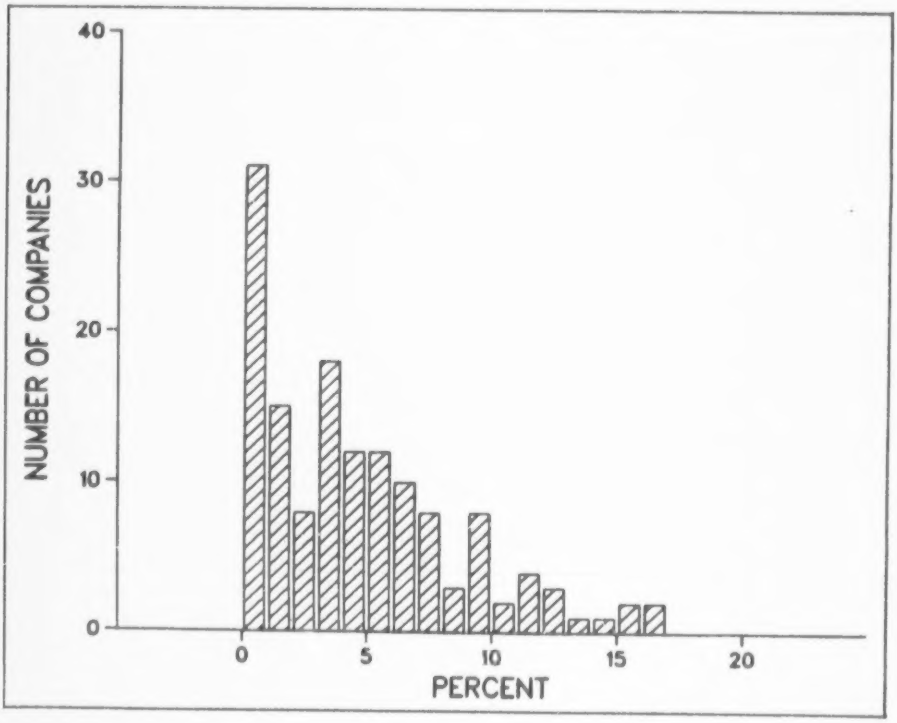

Figure 4.3. Distribution of Initial Rate Impacts with Inclusion of 50% CWIP in Rate Base: FERC Study.

the aggregation of company data to regional levels. Nevertheless, the EIA study does show significant variability in CWIP impacts across regions. In 1983, the regional price impact estimates range from about 0 to 5%. To the extent that a bias resulted from this aggregation problem, the EIA study probably underestimates the true impacts to a small degree.

A second factor explaining the differences in the results of the two studies is that the EIA study assumes a one-year regulatory lag whereas the FERC study assumes no lag. The FERC's ratemaking policies (especially the use of future test year and the allowance of interim rates subject to refund) can be argued to create little or no lag in wholesale rates. As a result, the one-year regulatory lag assumption in the EIA study probably biases its results downward, at least for the first few years of the policy's effectiveness. It is estimated that the average increase in prices to affected customers in 1983 derived from the EIA study and assuming no regulatory lag would be about 3.2% when 50% CWIP is included in rate base.

Third, the EIA study base case--which is used for comparison to determine incremental changes--assumes varying levels of CWIP in rate base among the regions whereas the FERC study base case assumes no CWIP in rate base. The base case in the EIA study reflects, by region, the average percentages of CWIP allowed in rate base by state regulatory commissions during 1981. Nationwide, the EIA study base case includes about 15% of CWIP in rate base, although this percentage varies among regions from 0.1% in the Central region to 42.6% in the North Central region (see Section 4.1.1). This is inappropriate for purposes of evaluating the effects of the FERC allowing 50% CWIP in rate base. The base case should reflect only the existing allowances of CWIP in rate base by the FERC. The FERC currently permits rate base treatment for CWIP associated with pollution control and fuel conversion facilities.* The final rule would not change this provision but rather would allow up to 50% of a company's remaining CWIP also to be included in rate base. Neither study separates pollution control and fuel conversion CWIP from total CWIP since such data would have required significant effort to be put in usable form. Nationwide, pollution control CWIP constituted about 11% of total CWIP balances in 1980 (Energy Inf. Admin. 1980). No data are available on fuel conversion CWIP. Taking account of these two factors--the EIA base case including state commission allowed CWIP but not including pollution control and fuel conversion CWIP--would probably leave the EIA's national impacts about the same. However, the regional impacts may be biased depending upon the relative magnitudes of the CWIP allowed by state commissions and the CWIP associated with pollution control and fuel conversion facilities. Assuming the proportion of CWIP related to pollution control and fuel conversion facilities is about the same for all regions, the EIA study's impacts would be biased upward for the Central, West and Northwest regions and biased downward for the New York/New Jersey, Southwest, and North Central Regions. Since the FERC study did not reflect the rate base inclusion of any CWIP, its results are biased upward.

Fourth, neither study included nuclear fuel in process in its definition of CWIP as the final rule would permit. The only data readily available on nuclear fuel incorporate--in addition to the "in process" fuel covered by the rule (Account 120.1)--nuclear fuel materials and assemblies (Account 120.2), nuclear fuel assemblies in reactors (Account 120.3), spent nuclear fuel (Account 120.4), and the accumulated provision for amortization of nuclear fuel assemblies (Account 120.5). Although the net of these nuclear fuel cost components constituted only about 6.5% of total electric plant CWIP for all Class A and B electric utilities at the end of 1980 (Energy Inf. Admin. 1980), the percentage varied widely across utilities. Upon review of these data, it appears that the results of both studies may be biased downward to a small degree by their failure to consider this item.

A fifth factor is that the EIA study reflects the demand feedback effects and resulting impacts on variable costs of price changes whereas the FERC study assumes that customer consumption patterns and levels will not change as a result of the price changes. Electricity prices rise when CWIP is placed in rate base and demand falls. The reduction in demand would lead to a reduction in variable costs, primarily through the reduced consumption of the highest-cost fuels. Because of the FERC model's failure to consider the effects on demand, the impacts estimated by that model are biased upward.

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*Although the current FERC provisions also allow some CWIP in cases where severe financial difficulty is demonstrated, no company has applied for and received such relief in a final rule by the Commission.

Sixth, in the EIA study, the demand feedback effects result from interaction between the NUFS and MEFS models in only three years--1985, 1990, and 1995--the first of which is three years after the policy change is assumed to take effect. Estimates of electricity demand for the years between the base year (1979) and 1985, between 1985 and 1990, and between 1990 and 1995 are derived through interpolation. Since the CWIP policy price impacts would be greatest in the initial year of implementation (1982) and decrease over time, the demand reductions determined in the MEFS/NUFS interaction in 1985 and interpolated back to 1982, 1983, and 1984 are muted. As a result, the estimates of the CWIP policy prices for these years--determined in the NUFS model by dividing the electricity demand estimates into required revenues--are biased downward.

Finally, it should be noted that neither the EIA study nor the FERC study incorporated the 6% annual ceiling on rate increases attributable to the rule in their analyses. As a result, the average impacts on affected customers predicted by both studies are potentially biased upward. The EIA study did not predict initial increases as high as 6%. However, if the individual utilities within each region were limited to the 6% ceiling, the aggregate regional and national impacts would be lower. Quantification of this effect is not feasible. With regard to the FERC study, however, it is estimated that taking the 6% ceiling into consideration would lower the average rate increase to affected customers by over 1 percentage point from 4.70% to 3.57%.

In summary, these considerations taken together suggest that the FERC study probably provides the more accurate estimates of the level of initial impacts, although these estimates may overstate the true impacts to a small degree. It is clearer, however, that the initial impact estimates of the EIA study are biased downward. No significant bias in either direction is apparent in the national results for 1985 and beyond, although less certainty can be attached to the regional results. None of the above considerations, however, would change the two primary conclusions of the EIA study: (1) that impacts would be greatest in the early years of the policy change and diminish over time, and (2) that CWIP-based prices may remain above non-CWIP prices for the foreseeable future.

In evaluating price impacts, the differential impacts on the various customer groups must be considered. The actual impacts are likely to vary from those shown in Table 4.1 depending upon whether the customers are (1) wholesale or retail customers, (2) wholesale customers that purchase total- or partial-requirement services, (3) retail customers of utilities that are total- or partial-requirement wholesale customers, or (4) large or small retail purchasers of electricity. Neither the EIA nor the FERC study distinguish impacts on these various customer groups. Rather the studies show the impacts of allowing a company (or companies) to set its average price at a level that allows it to recover the carrying costs associated with CWIP. Meaningful statements as to differential impacts on different customer groups must be inferred from these average price impacts. The discussion that follows addresses these relative impacts in general terms for retail customers. Retail customer impacts are evaluated in a more detailed manner in Section 4.2.4 below.

Costs used in setting rates for each customer group can be separated into two types: those that are the same regardless of the amount of electricity produced (fixed costs) and those that vary with the level of output (variable costs). Examples of fixed costs include return, associated income taxes, and depreciation. Variable costs consist primarily of fuel expenses. The return and tax costs that would be added to required revenues if CWIP were included in rate base are fixed costs. Wholesale rates usually reflect a lower proportion of fixed costs than do retail rates. If inclusion of CWIP in rate base results in a proportionate increase in the fixed-cost component of a utility's cost of service and if a less than proportionate share of this cost is allocated to wholesale customers, wholesale rates would rise less than retail rates. Because neither the FERC nor the EIA study incorporates this consideration in their analyses, the above estimates of average rate impacts probably overestimate the impact on wholesale rates as a result of a FERC policy change allowing CWIP in rate base.

For purposes of this analysis, wholesale customers of FERC-regulated entities can be distinguished by whether they purchase all of their power requirements (total-requirement customers) or only some of their power requirements (partial-requirement customers) from a FERC-regulated entity (see Section 1 and Table 1.1, above). Obviously, a customer that purchased all of its power needs from a FERC-regulated entity would experience a greater impact than one that purchased only a portion of its needs, although the per unit price increase to each would be the same.

The impact of a FERC policy change on the retail customers of total- and partial-requirement wholesale customers would be different. The retail customers of total-requirement wholesale customers would experience average impacts roughly comparable to those of the wholesale customers. Partial-requirement wholesale customers, however, would be able to mix the effects of wholesale price changes with the costs of their own generation in setting rates for their retail customers. In other words, the retail customers of partial-requirement wholesale customers would experience less of an impact than the retail customers of total-requirement wholesale customers due to a FERC policy change regarding CWIP.

The rate impacts among the classes of retail customers--residential, commercial, and industrial--as a result of the Commission allowing CWIP in rate base depends upon the disparate practices used in setting retail rates. Eighty-five percent of total-requirement and 60% of partial-requirement wholesale customers are municipal- or cooperative-owned utilities whose retail rates are largely unregulated.* The other wholesale customers are regulated by state or local utility commissions. There is no uniformity in either the methods used to set rates for different classes of retail customers or in the methods used to allocate wholesale power cost increases. For example, some municipals or cooperatives may have a policy of subsidizing industrial rates to promote business development. Other utilities may attempt to hold down residential rates by passing on a disproportionate share of cost increases to their commerical and/or industrial customers. Still others may employ sophisticated cost allocation procedures based upon embedded or marginal costs. Because there is considerable variation in the policy bases and cost allocation methods used in setting retail rates among municipals and cooperatives and among state and local commissions, no attempt is made in this study to estimate the relative price impacts of the CWIP policy on retail customer classes (see Section 4.2.4, below).

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*In terms of kilowatt-hours, over 60% of total-requirement and about 35% of all partial-requirement sales were to municipals and cooperatives in 1977, the latest year for which these data were compiled (Energy Inf. Admin. 1977--pp. 1300-1302).

Evaluations of the impacts of policies such as including CWIP in rate base typically employ present value analyses. Present value analysis is a means of evaluating the relative value of alternative investments where there are differences in the time patterns of cash flows. The CWIP policy involves changing the time pattern of the recoupment by utilities of certain costs in the rates charged to their customers. Present value analysis takes into consideration the time value of money, i.e., that a dollar today is worth more than a dollar tomorrow. It does this by discounting the cash flows by a discount rate reflecting alternative uses of money. The analysis of the CWIP issue is typically performed from the perspective of ratepayers, i.e., comparing revenue requirements with and without CWIP in rate base. If the present value of revenue requirements with CWIP in rate base is less than that without CWIP in rate base using the customer's discount rate, the customer should prefer that CWIP be included in rate base. If the present value is equal to or greater than that without CWIP in rate base, the customer should be indifferent or not prefer CWIP in rate base.

In general, when considering this issue from the customer's perspective, it is appropriate to view the utility as a whole growing over time. The EIA study provides such a perspective. However, since that study only estimates customer rates through 1995 and since the CWIP-based rates generally remain above non-CWIP rates throughout that period, no present value analysis of these statistics would produce results suggesting that consumers would prefer CWIP in rate base. Since there is no ambiguity in the results that could be obtained from a present value analysis of the EIA results, there is no merit in performing such an analysis. There is no dispute that customers may pay higher prices with CWIP in rate base for the foreseeable future. The concern of this report is whether the impact of these higher prices is significant. It does not appear that they would be as a result of the Commission's action.

The results of the EIA study regarding the effects on consumption of electricity of including 50% CWIP in rate base are presented in Table 4.1. In general, the amount of electricity consumed would decline throughout the period studied. The greatest decrease in total consumption of electricity would occur in 1983 (1.4%) and 1985 (1.98%); a lesser decrease in consumption would occur in 1990 (0.84%) and 1995 (0.10%). There would also be a wide variation among the regions in the demand impact (Table 4.1).

These consumption changes follow directly from the relative prices to customers in the CWIP case and the base case. The higher relative CWIP price during the early period of analysis causes the greater reduction in consumption in the early period. Over time, as the CWIP prices and base (non-CWIP) prices came closer together, the differences in consumption between the two cases would become less.

4.2.2 Impact on Utilities

4.2.2.1 Financial Impacts

Data from the EIA and FERC studies regarding the financial impacts on utilities of including 50% CWIP in rate base are presented in Tables 4.2 through 4.4. In general, the data indicate that the financial condition of the jurisdictional portion of utilities would be measurably improved. The data also show significant variability in impacts among utilities (FERC study) and regions (EIA study). Regional data are presented only for internal cash flow changes because the impacts on the various financial ratios are directly related to these changes and little additional insight would be gleaned from presentation of these data.

Including CWIP in the rate base would change non-cash AFUDC earnings into cash earnings and, therefore, the cash flow would increase--at least initially--for utilities with plant under construction. Both the FERC and EIA studies confirm this and show that the increase in cash flow would be large for some companies and regions. Nationally, the EIA study shows an initial increase in internal cash flow of about 6% associated with including 50% CWIP in rate base. (As with the other impacts from the EIA study, the apparent result of assuming a one-year regulatory lag is that no significant changes take place until at least one year after the policy change is instituted.) The EIA study also shows that the cash flow impacts would be greatest in the period immediately following a change in CWIP policy and stabilize at moderate levels after 1990. The time pattern of cash flow impacts would be roughly comparable to that of the price impacts discussed earlier because the increase in cash flow in the CWIP case compared to the base case would be essentially equal to the increase in revenues less the additional taxes that utilities would have to pay on the increase in revenues. That is, abstracting from changes in demand (and its resultant effects on fuel consumption and costs), a one-dollar increase in revenues would net a utility a 54-cent increase in cash flow if the marginal tax rate were 46%.

The initial impacts of the FERC study are approximately twice those of the EIA study. Factors that may explain these differences and the likely biases in these studies were discussed in reference to the price impacts and need not be reiterated here (see Section 4.2.1).

Other measures of the impact of CWIP policies on utilities are (1) internal cash flow as a percent of construction expenditures; (2) internal cash flow as a percent of total sources of funds; (3) before-tax interest coverage; and (4) rate of return on common equity. Except for the latter, these measures are informative in that they can be related to bond ratings, a relatively objective measure of the financial condition of utilities. For this purpose, 5-year averages of these statistics for electric utilities by bond rating are given in Table 4.5. By any of these measures, improvement in the financial condition of utilities is projected as a result of inclusion of 50% CWIP in rate base.

These statistics are based on whole companies or regions. They do not represent FERC impacts exclusively. However, they are measures of impacts on the FERC-jurisdictional portions of companies assuming proportional allocations

Table 4.2. Impact on Utilities of Allowing Uniform 50% CWIP in Rate Base

	% Change in Cash Flow*			
Region	1983	1985	1990	1995
Nation	5.38	9.69	4.18	4.32
New England	4.78	22.16	-2.22	-1.94
New York/New Jersey	1.71	4.02	2.22	2.55
Middle Atlantic	3.34	6.67	4.72	3.81
South Atlantic	6.90	11.16	6.98	6.01
Midwest	7.28	14.23	5.52	5.64
Southwest	2.28	3.47	4.89	3.41
Central	6.13	11.84	12.94	14.00
North Central	-0.31	1.17	-2.65	5.59
West	12.85	13.68	1.17	-0.98
Northwest	16.77	10.92	0.50	6.72

*Calculated over the base case.

Source: Energy Information Administration (1982b).

Table 4.3. Impact on Utilities' Financial Indices of Allowing 50% CWIP in Rate Base: EIA Study

	Impact on Utilities			
Financial Index	1983	1985	1990	1995
Internal Cash Flow as a Percent of Construction Expenditures:				
Base	33.61	35.81	44.79	41.46
50% CWIP	40.99	44.86	50.45	46.21
Before-Tax Interest Coverage:				
Base	2.24	2.12	2.20	2.16
50% CWIP	2.45	2.48	2.45	2.41
Rate of Return on Common Equity:				
Allowed	16.7	14.9	14.6	13.1
Base	14.2	14.2	14.6	14.0
50% CWIP	12.8	14.3	14.7	14.2

Source: Energy Information Administration (1982b).

Table 4.4. Impact on Utilities' Financial Indices of Allowing 50% CWIP in Rate Base: FERC Study

Financial Index	Mean	Standard Deviation	Impact* High	Impact* Low
Percent Change in Cash Flow Over Base Case:	13.08	12.11	60.86	0.15
Internal Cash Flow As a Percent of Total Sources of Funds:				
Base	50.18	21.88	116.38	14.07
50% CWIP	52.50	20.76	116.09	14.18
Before-Tax Interest Coverage (Actual):				
Base	2.40	0.89	5.73	0.73
50% CWIP	2.78	0.85	5.75	0.75
Before-Tax Interest Coverage (Hypothetical, Definition 1):				
Base	2.90	0.84	5.50	1.28
50% CWIP	3.29	0.75	5.55	1.40
Before-Tax Interest Coverage (Hypothetical, Definition 2):				
Base	2.74	0.78	5.48	1.41
50% CWIP	3.12	0.68	5.50	2.00

*Data reflect the impact on the highest and lowest individual utility in the sample.

Source: Federal Energy Regulatory Commission (1982).

of costs. For the FERC's decision-making, it is the impacts on the jurisdictional portions of the companies it regulates that are of primary relevance. Since the Commission regulates only a small portion of the sales of most utilities, the impact of the Commission allowing CWIP when measured against the whole company would be substantially less than indicated by these statistics. Of course, these statistics also measure the impacts on utilities to the extent that both the Commission and the respective state or local commission allow proportional amounts of CWIP in rate base.

Both internal cash flow ratios are intended to measure the ability of utilities to meet their cash flow needs through the generation of funds internally. Internal cash flow is defined for the EIA study percentage to include (1) net income after payments of preferred and common stock dividends, (2) depreciation, depletion, and amortization, (3) net deferred income taxes, and (4) net investment tax credits, and to exclude all AFUDC. Construction

Table 4.5. Selected Financial Indices of Electric Utilities by Bond Rating*

Moody's Bond Rating	Internal Cash Flow as a Percent of Construction Expenditures	Internal Cash Flow as a Percent of Total Sources of Funds	Before-Tax Interest Coverage
(1)	(2)	(3)	(4)
Aaa**	45.41	54.32	3.47
Aa	54.35	52.31	3.11
A	47.15	52.57	2.51
Baa	33.16	46.56	1.90

*Columns (2) and (4) based on 5-year averages for 1977 through 1981. Column (3) based on 5-year averages for 1976 through 1980 using a comparable bond rating breakdown by Standard and Poor's.

**Based on sample of three utilities.

Source: Dean Witter Reynolds Capital Markets, "Electric Utility Industry Financial Handbook," Summer 1982. Column (3) is derived from statistics in Standard and Poor's Utility Compustat II date base.

expenditures excludes all AFUDC and includes changes in nuclear fuel stock. For the FERC study, internal cash flow is the sum of (1) net income before payments of preferred and common stock dividends, (2) depreciation, depletion, and amortization, (3) net deferred income taxes, (4) net investment tax credits, (5) decrease (increase) in working capital, and (6) net other internal sources, and it excludes all AFUDC. Total sources of funds includes internal cash flow plus new security issuances and other funds from outside sources. As indicated, the primary difference in the two ratios involves (1) whether or not internal cash flow includes dividends, and (2) the basis upon which these measures of internal cash flow are compared. Unfortunately, in the modeling for the two studies, a single, comparable cash flow ratio definition was not established.

Measured by the ratio of internal cash flow to construction expenditures from the EIA study, the industry as a whole would move initially from a bond rating category of Baa to somewhere between Baa and A if 50% CWIP were allowed in the rate base (33.61 to 40.99) (compare Tables 4.3 and 4.5). Using the FERC study ratio, the improvement would be from between a Baa rating and an A rating to an Aa/A rating (50.18 to 52.50) (compare Tables 4.4 and 4.5). Without CWIP, the EIA study indicates that the ratio of internal cash flow to construction expenditures would increase for the industry over time, but it would not quite reach the level associated with the A bond rating within the time period studied. With 50% CWIP, this ratio would improve to a level associated with a bond rating between A and Aa over the period studied.

The interest coverage ratios are measures of how utilities are able to meet one particular cash flow need, namely, interest expense. The definitions used for all of the interest coverage ratios are essentially the same in that they exclude all AFUDC and reflect coverage of all interest charges (for both long-term and short-term debt). Before-tax interest coverage is defined as the sum of (1) net operating income, (2) other income (excluding the equity portion of AFUDC), and (3) all income taxes--divided by total interest expenses.

The EIA study shows that, initially, including 50% CWIP in rate base would raise the industry's interest coverage ratio from that associated with a bond rating between Baa and A to close to one associated with about an A rating (2.24 to 2.45) (compare Tables 4.3 and 4.5). The FERC study, using the actual interest coverage statistic, shows an initial improvement to above an A rating (2.40 to 2.78) (compare Tables 4.4 and 4.5). Without CWIP, the EIA study shows that the interest coverage ratio in 1985, 1990, and 1995 would be between 2.12 and 2.20; whereas, with 50% CWIP, the ratio would be between 2.41 and 2.48 (see Table 4.3).

The FERC study includes two hypothetical interest coverage ratios. Both are intended to reflect the situation where the utility is earning its cost of common equity. The "Definition 1" ratio reflects a coverage ratio relating only to the electric operations of the company whereas the "Definition 2" ratio relates to the whole company. The "Definition 1" hypothetical before-tax interest coverage ratio is calculated as the overall (assumed) allowed rate of return times net electric utility plant plus associated income taxes divided by an allocated portion of long-term and short-term interest expenses. The "Definition 2" hypothetical coverage ratio is defined as the actual whole-company coverage ratio (defined above) plus an adjustment to reflect the company's earning the (assumed) allowed rate of return on common equity.

By both of these measures, utility coverage ratios would be significantly improved if allowed rates of return were being earned. The coverage ratio would increase to 2.90 (using Definition 1) or to 2.74 (using Definition 2) from the actual book-indicated coverage ratio of 2.40 (see Table 4.4). This improvement is in the absence of any CWIP allowance. Of note, however, is that this improvement is very comparable to the improvement in the actual coverage ratio when 50% CWIP is allowed (2.40 to 2.78). This suggests that if the Commission's goal is to improve utility interest coverages (or perhaps, by implication, bond ratings), including 50% CWIP in rate base would yield a result comparable to one that eliminated attrition (e.g., allowing higher rates of return or giving attrition allowances).

The final statistic presented from the EIA study is rate of return on common equity. No comparable statistic is produced by the FERC study because it does not attempt to model the impact of investment tax credits (ITC). In comparison with the allowed rate of return, the rates shown in the EIA study for the base case and the 50% CWIP case suggest that utilities would have the potential to earn higher rates of return as a result of CWIP being included in the rate base. This effect results from the method by which tax credits are computed and shared between ratepayers and investors. In general, the sharing of the associated tax benefits would tend to provide investors with returns higher than those allowed. However, this effect is increased when CWIP is included in the rate base. This effect results because the ITC obtained on an investment is based on the value of plant additions excluding AFUDC, so that the ITC is the same regardless of whether CWIP is included in rate base or not. Likewise, the value of the benefits going to investors does not change when CWIP is included in rate base. However, by changing AFUDC to a current expense for ratemaking purposes, including CWIP in rate base reduces the amount of capital, including common equity, necessary to finance plant additions. Taking the same amount of ITC benefits and spreading it over less common equity investment necessarily leads to higher rates of return on common equity. The effect of investment tax credits is shown most clearly in 1995 when the allowed rate of return on common equity is assumed to be 13.1% and the earned rate of return would be 14.0% in the base case and 14.2% in the 50% CWIP case. In prior years, the shortfall in earned returns relative to allowed returns is due to regulatory lag (and the resulting attrition) overwhelming the effects of the tax credits.

The above discussion must be qualified somewhat. In part, this impact arises because utilities choose to expense rather than capitalize the interest portion of AFUDC for tax purposes. If AFUDC interest were capitalized for taxes, the ITC would be based upon the direct capital costs plus this capitalized interest and would thus be larger. Presumably utilities choose to expense AFUDC interest because the benefits in terms of reduced current taxes and improved cash flow (assuming tax normalization) exceed the benefits that would accrue from the additional tax credits that could be expected from capitalizing this interest expense. It should be noted also that this qualification is not applicable to the equity return component of AFUDC which is not allowed to be capitalized for tax purposes.

Allowing CWIP in rate base is said to reduce financing costs to electric utilities.* There are several bases for this conclusion. First, allowing CWIP in rate base may reduce the risk on utility investments. Second, it may reapportion risk from stockholders and lenders to ratepayers. Both of these bases would tend to support some combination of a reduction in the unit costs of utility debt and equity capital and/or an increase in debt capacity. Debt capacity refers to the maximum extent to which lenders are willing to permit debt financing. A third basis is that CWIP inclusion, by increasing internal cash flow, may give utilities increased flexibility in their financing so as to make them better able to weather periods of high interest rates and minimize the dilutive effects of issuing common stock at prices below book value. That is, even if the unit cost of capital or the debt capacity do not change, the increased flexibility in security issuances may result in savings. Fourth, the reduction in demand for credit by the electric utility industry may lower interest rates generally.

The first two bases refer to reducing risk to shareholders and lenders, either by reducing the risk on utility investments or by shifting risk to ratepayers. Regarding the former, the argument is that inclusion of CWIP in rate base improves cash flow stability relative to cash needs, thereby reducing the probability that a utility will default on interest payments or be unable to maintain dividends. More cash flow is available for construction of new plant when it is most needed. It brings more certainty to the utility's cash flow stream by shifting recovery of costs from the future to the more certain present.

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*This discussion is based upon an evaluation of various studies and of comments submitted in the Commission rulemaking on CWIP (Docket No. RM81-38). A listing of these studies and comments is provided in Section 5.2.

An equally compelling but contrary argument states that the CWIP policy merely shifts cash flows across time. Except for certain second-order effects due to the different time pattern of rates of demand, there is no change in the risk associated with utility assets and, therefore, no change in the cost of capital. The cost of capital is, by definition, that rate at which cash flows can be shifted between time periods. As such, it incorporates the riskier nature of future cash flows.

An argument that more clearly suggests a shifting of risk to ratepayers is that including CWIP in rate base reduces the amount of shareholder or lender investment that is "at risk" of nonrecovery in cases of plant abandonment prior to completion or disallowance in rates after completion. This argument assumes that regulatory commissions would not require refunds of past-collected costs in cases of abandonment or disallowance. Consonant with this idea is the view that the quality of AFUDC income on the books of companies has deteriorated with the lengthening of construction periods, the increasing number of delays and deferrals of plants, and recent regulatory decisions disallowing or deferring recovery of abandoned and completed plants. With respect to FERC-regulated operations, the potential risk reduction is not very large. The Commission's abandonment policy permits recovery of all capital costs including AFUDC. The cost borne by shareholders in the case of abandonment is the financing costs of the unamortized portion of the loss during the period of amortization. The reduction in this cost from inclusion of CWIP in rate base is equal to the financing cost on that portion of AFUDC collected in rates. This is likely to be relatively insignificant. Further, with respect to the concern that AFUDC income has deteriorated in quality, it is noteworthy that AFUDC is recorded and capitalized in the books of utilities at actual embedded costs and allowed rates of return on common equity. With CWIP in rate base, continuation of attrition may mean that lower returns will be realized on those investments.

Another perspective on the financing cost impact of including CWIP in rate base focuses on the increased flexibility provided to utilities rather than a reduction in risk. To the extent that CWIP inclusion provides more internal cash flow, a utility has more flexibility in choosing when to seek funds from the capital markets and which type of securities to issue. Thus, a utility is better able to weather periods of high interest rates and minimize the dilutive effects of issuing common stock at prices below book value. The total financing costs of plant rather than the cost of specific securities would fall as a result of including CWIP in rate base. This view has plausibility given the impacts on cash flow suggested in this study. The FERC study predicts an average initial increase in internal cash flow of 13.1% and the EIA study shows an increase nationally of about 5.4% as a result of including 50% CWIP in rate base. The EIA study shows that in 1983, internal cash flow could finance 41.0% of construction expenditures instead of 33.6% without CWIP in rate base. In 1985, the improvement would be from 35.8% in the base case to 44.9% with 50% CWIP in rate base. The magnitude of these increase suggests some improvement in the flexibility that utilities would have in their financing activities.

The fourth basis for concluding electric utility financing costs would be reduced--and probably the least significant from the perspective of the proposed action--also follows from improved cash flow. Since the electric utility industry accounts for a large proportion of total public financing and the inclusion of CWIP in rate base would measurably reduce the external financing needs of this industry, it is argued that interest rates in general would fall. One commenter in the CWIP rulemaking stated that utilities typically account for 25% to 40% of total public financing (Appalachian Power Company et al.--Reply Comments, Docket No. RM81-38). The reduction in this external financing due to inclusion of CWIP in rate base, however, cannot be directly imputed from the EIA and FERC studies. Other studies, however, suggest significant decreases in external financing (see Section 4.4). However, in considering this effect from the perspective of a change in the Commission's policy only (exclusive of state commissions following the policy change), it is doubtful that the impact could be more than marginal.

A number of empirical studies have attempted to evaluate the impact of rate base treatment of CWIP in financing costs to utilities. In general, they have focused on showing changes in the cost of debt or common equity. Estimates of the reduction in the cost of common equity due to including CWIP in rate base range from about 40 to over 300 basis points. Debt costs are estimated to fall by 50 to 100 basis points.

These studies are not without faults, however, that tend to limit their value. A major fault common to all the studies is the failure to separate the effects of CWIP from the regulatory treatment of CWIP. That is, the size of a company's construction program relative to its plant-in-service may influence risk as perceived by investors rather than or in addition to whether or not CWIP is included in rate base. The studies rely predominantly upon the AFUDC to net income ratio as the independent variable relating to CWIP policy. However, this variable is an indicator of both the relative size of the construction program and the extent of CWIP inclusion in rate base. The value of this variable could be the same for a company with a large construction program that is allowed to include, for example, 50% CWIP in rate base as it would be for a company with a moderate construction program and no CWIP in rate base.

The AFUDC to net income ratio has other problems. Two companies with identical construction programs and regulatory treatment of CWIP could have significantly different ratios due to (1) the use of a gross-of-tax AFUDC rate versus a net-of-tax rate, (2) differences in earned returns on plant in rate base, and (3) differences in financial structure to the extent that only equity AFUDC is used in the numerator of this ratio. With regard to the latter point, it is unclear in some studies whether the total AFUDC or only the equity portion of AFUDC was used in computing the ratio. Prior to 1977, the equity and debt portions of AFUDC were not distinguished in the annual reports of companies.

Another general criticism applicable to most of the studies is the failure to evaluate whether the CWIP variable is independent of other variables. For example, state commissions that permit CWIP in rate base may also have other policies that reduce utility investment risk or allocate more risk to ratepayers. Conversely, state commissions that do not allow CWIP in rate base may tend to do other things that increase risk to investors.

In summary, it appears that although there is merit to the conclusion that allowing CWIP in rate base would produce savings in financial costs to utilities, the magnitude of such savings is uncertain. Neither theory nor empirical evidence is conclusive regarding the effects of a CWIP in rate base policy on the risk of utility enterprises. However, although this risk may not change, a lower cost of capital to utilities may ensue from a shift of risk to ratepayers. Further, since the magnitude of the impact on cash flow of a CWIP policy appears--at least initially--to be large for some utilities, increased flexibility in financing is likely to create some cost savings to utilities. Finally, the reduction in external financing by the utility industry as a whole resulting from the Commission allowing CWIP in rate base is likely to have only marginal effects on interest rates in general.

4.2.2.2 Investment and Fuel Use Impacts

The EIA study estimated changes in utility plant additions and fuel use in response to changes in CWIP policy for the period 1982 through 1995. The national impacts are summarized in Tables 4.6 and 4.7.

The "base plus 11% CWIP" case measures the direct impact of the Commission on utility decisions. (As indicated in Section 4.1, above, the 11% value overstates the impact of the proposed rule.) If the Commission were to permit 100% CWIP in rate base in setting rates for jurisdictional sales and if no state or local commission followed its precedent, this case would represent an estimate of the maximum impact the Commission could have through including CWIP in rate base on the fuel choice and investment decisions of the electric utility industry as a whole. However, the final rule, which would only include 50% CWIP in rate base, would have less than half the impact indicated by the "base plus 11% CWIP" case. Of course, the impacts would vary among utilities depending upon the extent that the percentage of their sales regulated by the Commission deviated from the national 11% figure.

As seen in Table 4.6, the largest overall percentage change in new capacity--a reduction of about 1% from the base case--would occur in 1990 under both the "base plus 11% CWIP" case and the 50% CWIP case. By 1995, the differences between the CWIP case and the base case would be negligible. Furthermore, in the "base plus 11% CWIP" case, only coal and turbine additions would be affected (Table 4.6). In the 50% CWIP case, there would also be minor changes in the oil-steam, gas-steam, and hydro plant categories in 1985.

Some qualifications are warranted with respect to these impacts. The MEFS model from which these results were obtained relies on utility data for planned additions through 1995. Beyond that year, a constant growth in additions by plant type is assumed, based on regional growth rates for the 5-year period ending in 1995. Upper limits for additions on most plant types through 1990 (1995 for nuclear) are set by what is already planned as of the base year (1979). Further, the model places plant additions in three categories: (1) committed, (2) deferrable, and (3) new. Nuclear plants scheduled for operation prior to 1988 and coal plants prior to 1982 are "committed." That is, the model allows for no variances in the schedules for these plants. As demand drops, plants in the "deferrable" category may be rescheduled to later in-service dates by the model. Some nuclear plants scheduled for operation between 1988 and 1995 (coal plants between 1983 and 1995) are "deferrable." "New" plants are added to meet increases in demand projections. Some nuclear

Table 4.6. National Impact on New Capacity by Plant Type of Allowing a Uniform Percentage of CWIP in Rate Base

Plant Type	Year	Base Case* (GW)	% Change in New Capacity Over Base Case	
			11% CWIP**	50% CWIP
Nuclear	1985	36.42	--	--
	1990	69.54	--	--
	1995	84.05	--	--
Oil-Steam	1985	4.09	--	-3.42
	1990	3.95	--	--
	1995	3.95	--	--
Gas-Steam	1985	0.56	--	25.00
	1990	0.70	--	--
	1995	0.70	--	--
Coal	1985	48.50	-0.70	-1.48
	1990	100.23	-0.29	-0.88
	1995	176.08	--	--
Turbine	1985	0.13	284.62	-15.38
	1990	1.32	-97.73	-97.73
	1995	27.26	0.48	-1.36
Comb. Cycle	1985	1.03	--	--
	1990	0.95	--	--
	1995	1.17	--	--
Hydro	1985	6.59	--	-2.43
	1990	15.84	--	--
	1995	17.48	--	--
New Techol.	1985	2.79	--	--
	1990	7.02	--	--
	1995	13.87	--	--
TOTAL	1985	100.11	-0.10	-0.90
	1990	199.55	-0.80	-1.09
	1995	324.56	0.04	-0.11

*Since imports are excluded from this summary, components may not sum to total.

**Base case plus 11% CWIP.

Source: Energy Information Administration (1982b).

Table 4.7. National Impact on Utility Use of Primary Energy of Allowing a Uniform Percentage of CWIP in Rate Base

Fuel Type	Year	Base Case (trillions of Btu)	% Change in Primary Energy Utilization*	
			11% CWIP**	50% CWIP
Nuclear	1985	4,986.6	-0.02	-0.04
	1990	6,939.5	--	--
	1995	7,782.0	--	--
Oil	1985	1,879.7	-2.05	-5.04
	1990	1,056.5	2.54	1.20
	1995	1,991.8	1.15	1.97
Gas	1985	2,230.3	-2.72	-6.88
	1990	2,098.6	-4.43	6.55
	1995	2,914.6	0.22	0.03
Coal	1985	13,503.3	-0.39	-1.03
	1990	16,557.9	-0.25	-0.61
	1995	20,544.4	-0.02	--
Hydro	1985	1,744.5	--	--
	1990	1,824.0	--	--
	1995	1,783.0	--	--
TOTAL	1985	24,345.3	-0.68	-1.79
	1990	28,476.8	-0.33	-0.74
	1995	35,236.6	0.35	0.07

*Changes are calculated over the base case.

**Base case plus 11% CWIP.

Source: Energy Information Administration (1982b).

plants scheduled for operation between 1992 and 1995 (coal plants between 1984 and 1995) are in this category. Finally, it should be noted that the MEFS model is not structured to take into consideration all of the financial constraints that companies may experience in attempting to finance their construction activities.

The impact of CWIP policy alternatives on the fuel mix of utilities in generating electricity is presented in Table 4.7. The final rule would have less than half the impact on fuel mix as the "base plus 11% CWIP" case. The greatest overall reduction in the use of fuel would occur during the early years of the policy change. This is consistent with the drop in electric consumption and rise in prices discussed in the previous section. The greatest percentage reductions in fuel use would occur with oil and gas. This is a direct result of optimizing generation mix to meet the demand for electricity at the lowest possible cost. Hydro, nuclear, and coal have the lowest operating costs and are selected even though the demand for electricity, as shown in

Table 4.1, would decline as a consequence of including CWIP in rate base. These results are based almost solely on projected relative prices for fuels. The prices assumed in this study reflect EIA's "mid-price case of world oil".*

The change in new capacity by plant type would not be significantly different on the regional level than on the national level as discussed earlier. The use of nuclear and hydro in all regions would be virtually unchanged. Oil and gas consumption would decrease in all regions over the study period except for a few regions in later years (Table 4.8). These regions would experience a decline in price and an increase in demand that would be met by oil- and gas-fired units. In some regions, coal use would also decline. Allowing for some range of error in the EIA models and assumptions, these small impacts may not be reliably distinguished from no (or zero) impacts.

4.2.3 Environmental Impacts

Environmental impacts related to the inclusion of CWIP in rate base would be secondary- or tertiary-level effects related to the amount of power generated and/or changes in plant types or fuel mix, which would in turn be determined by the primary economic effects on utilities and ratepayers. These primary economic effects have been quantitatively presented and discussed in previous sections of this EA, and are used in this section as the basis for a qualitative analysis of environmental impacts that could ensue due to allowance of CWIP in rate base.

The basic approach used to evaluate the potential environmental impacts was to quantitatively assess the relative magnitude of impacts from the incremental changes in utilization of the five generation (or fuel) types previously presented in Tables 4.6 through 4.8. This included the assumption that a direct and proportional relationship exists between energy production and the level of resulting environmental impact. Although this assumption may not be universally applicable to quantitative analyses, it was deemed appropriate for the current assessment because only qualitative approximations of the magnitude of secondary impacts at the regional and national levels are necessary within the normal scope of an EA. Additionally, due to inadequate existing data bases, it is doubtful that a more precise analysis could be undertaken in any case.

Environmental impact evaluations in the following discussion focus on the effects of allowing 50% CWIP in rate base. When interpreting the information presented below, it is important to note that although environmental conclusions presented are for inclusion of 50% CWIP in rate base, the 11% level is intended to represent the approximate jurisdiction of FERC. On a national average basis, the "base plus 11% CWIP" case overstates by a factor of two the impact of the FERC allowing only 50% CWIP in rate base. Thus, use of the 50% CWIP case in assessing the environmental impacts is a conservative approach.

Changes in environmental impacts discussed in the following sections are evaluated from a national and regional perspective. It is likely that the

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*See Energy Information Administration (1982a--Volume 3: Energy Projections) for discussion of assumptions and further analysis of the projections made with the MEFS model.

Table 4.8. Regional Impact on Utility Use of Fossil Fuels of Allowing a Uniform Percentage of CWIP in Rate Base

Regions	Base Case: Total Primary Energy Used (trillions of Btu) 1985	1990	1995
New England	933.5	1083.8	1230.6
New York/New Jersey	1386.5	1537.1	1997.0
Middle Atlantic	3135.1	3738.2	4385.4
South Atlantic	5737.2	6892.4	8790.2
Midwest	5556.4	6514.6	7943.2
Southwest	3442.1	4080.7	5227.9
Central	943.4	1069.6	1430.9
North Central	853.2	1185.8	1495.3
West	1817.6	1814.3	2145.7
Northwest	500.3	560.3	590.3

	Base Case: Fossil Fuel Used (trillions of Btu)								
	Oil			Gas			Coal		
Regions	1985	1990	1995	1985	1990	1995	1985	1990	1995
New England	491.3	224.5	295.4	11.1	0	5.5	79.5	281.7	353.5
New York/New Jersey	381.2	81.4	171.3	28.6	93.4	275.5	372.0	568.5	703.7
Middle Atlantic	101.2	236.7	402.0	39.4	63.3	132.5	2195.6	2364.8	2653.5
South Atlantic	128.4	155.0	682.6	136.0	155.8	274.3	3644.5	4315.2	5124.3
Midwest	90.8	114.3	362.4	137.0	95.4	208.5	4054.0	4546.5	5333.0
Southwest	0	0	0	1736.3	1476.8	1316.9	1422.1	2064.0	3242.1
Central	0	5.8	12.3	32.4	44.7	102.3	695.4	804.0	1080.4
North Central	0	0	2.2	0	0	0	706.1	1003.0	1328.2
West	686.8	238.8	63.6	108.6	156.7	591.4	298.9	573.1	644.9
Northwest	0	0	0	0.9	12.5	7.7	35.2	37.1	80.8

		Percent Change*								
		Oil			Gas			Coal		
Regions	% CWIP	1985	1990	1995	1985	1990	1995	1985	1990	1995
New England	11%**	-0.62	1.76	-0.06	0	***	85.71	0	-1.69	-1.34
	50%	-0.89	3.89	-0.16	0	0	0	0	0	0
New York/New Jersey	11%	-1.22	4.41	2.73	-1.36	-1.67	1.7	0	0	0
	50%	-2.76	2.97	13.58	-2.99	1.17	2.21	0	0	0
Middle Atlantic	11%	-20.91	-3.36	-0.17	0	-2.2	-0.37	-1.03	-0.16	0.01
	50%	-45.84	-7.19	0.09	0	-2.2	0.15	-2.29	-0.31	-1.03
South Atlantic	11%	-5.74	-2.63	-1.25	-22.98	-17.5	0.43	0.06	0.04	-0.6
	50%	-15.51	-5.58	-2.2	-59.66	-30.09	-0.79	-0.33	0.08	-0.10
Midwest	11%	-11.18	-5.95	1.38	-3.38	-21.28	3.40	-0.51	-0.49	0.03
	50%	-22.25	-14.66	1.49	-24.98	-52.06	3.54	-1.27	-1.2	0.02
Southwest	11%	0	0	0	-1.56	-0.97	0.05	0	0	0
	50%	0	0	0	-2.64	-0.89	-0.23	0	0	0
Central	11%	0	-2.7	1.28	0	-0.70	1.15	-1.82	-0.01	0.09
	50%	0	-8.1	-4.48	-6.56	-2.29	-5.01	-3.57	0.33	-0.40
North Central	11%	0	0	17.14	0	0	0	0	-1.08	0.49
	50%	0	0	14.28	0	0	0	-0.31	-3.46	0.43
West	11%	0.27	12.51	25.0	-0.34	-0.09	-1.23	0	-0.01	-0.16
	50%	-0.77	14.47	24.53	0.95	0.28	-0.12	0	0	-0.17
Northwest	11%	0	0	0	0	-92.57	-5.00	0	0	0.50
	50%	0	0	0	0	-92.57	-5.00	0	0	0.50

*Changes are calculated over the base case

**Base case plus 11% CWIP.

***Change is indeterminate because base case would have no gas consumption whereas the 11% case would have gas consumption.

Source: Energy Information Administration (1982b).

magnitude of certain local or site-specific changes in impacts (most of which would be beneficial) would surpass those identified below. Evaluation of these changes is neither practical nor reasonable within the scope of the current assessment, especially since the impacts are predominantly beneficial.

The generic information contained in Tables 4.9 and 4.10 was used to qualitatively evaluate changes in environmental impact related to allowance of CWIP in rate base. Table 4.9 is a listing of typical atmospheric emissions from 1000-MWe generating stations of the five generation types; these emissions (particulates, sulfur dioxide, nitrogen oxides, carbon monoxide, hydrocarbons) are commonly perceived as important risk factors to public health. The generation types are listed in decreasing order of importance relative to the production of emissions: i.e., coal, oil, gas, nuclear, and hydroelectric.

Table 4.9. Atmospheric Emissions from 1000-MWe Power Stations

	Emissions (approximate tons/year)*				
	Coal	Oil	Gas	Nuclear	Hydroelectric
Particulates	5,000	800	510	< 1	< 1
Sulfur dioxide	98,000	53,000	14	< 1	< 1
Nitrogen oxides	23,000	24,000	13,000	4	< 4
Carbon monoxide	580	20	58	< 1	< 1
Hydrocarbons	230	740	3	< 1	< 1

*Assumptions: coal--2.3 million tons of coal, 2.5% sulfur, 97.5% fly ash removal; oil--460 million gallons of oil, 1.6% sulfur, no pollution control; gas--6.8 billion SCF of natural gas, no pollution control; nuclear and hydroelectric--emissions result from testing and use of emergency and supplementary fossil-fueled equipment (less such equipment is assumed per 1000-MWe hydroelectric station compared to one-unit nuclear station).

Source: Scott (1973); U.S. Environmental Protection Agency (1977); U.S. Nuclear Regulatory Commission (1977); Zussman and Chee (1982).

Table 4.10 is a listing of 22 environmental impact subject areas as they pertain to electric power generation using the five generation types. This table also contains environmental impact summaries of the four fuel cycle components: supply (mines, mills, oil and gas wells, hydroelectric dams); transportation (rail, pipeline, barge, highway); generation (the power plants); and waste disposal (landfills, storage, etc.). It is important to note that all impact evaluations in Table 4.10 are relative comparisons of the five generation types, and do not imply the absolute magnitude of impact.

The base case presented in Tables 4.6 through 4.8 is the no-action alternative in which it is assumed that no allowance of CWIP is included in the rate base. Under such circumstances, there would also be no changes in environmental impacts for the five generation types that are related to changes in generation mix, conservation, use of new energy technologies, and pollution-control requirements. Environmental changes that might occur would be due to economic or other factors that are unrelated to the CWIP rule change.

As indicated in Section 4.2.2.2 and Table 4.7, the effects of the CWIP rule change on utility fuel mix at the national level would be minor. The greatest change in fuel use would occur in the early years of the policy when reductions in oil and gas use would be evident, with reductions on the order of 5 to 7%. In later years (1990), the use of gas would increase slightly before again decreasing in 1995. Small reductions in use of coal would occur up to 1990. Other major types of generation would undergo only insignificant changes. At the national level, the indicated changes in fuel mix would result in predominantly beneficial but negligible effects in national average environmental quality, especially because oil and gas generation make up a very small percentage of total generation and are relatively "clean" fuels with regard to environmental effects (see Tables 4.9 and 4.10). It is likely that even small reductions in national coal use (Table 4.7) would result in greater absolute reductions in national average environmental impacts because of the relatively greater magnitude of impacts associated with the coal fuel cycle (Table 4.10), but the overall improvement in national average environmental quality would probably not be discernable.

As shown in Table 4.8, the changes in fuel mix and fuel use would be more apparent at the regional level than at the national level. As at the national level, the greatest changes would be reductions in oil and gas use, particularly in the Middle Atlantic, South Atlantic, Midwest, and Northwest (gas only) regions. The Middle Atlantic region would experience an estimated 45% reduction in oil use in 1985, the South Atlantic a 15% oil reduction and 60% gas reduction in 1985, the Midwest a 22% oil reduction and 25% gas reduction in 1985 (52% gas reduction in 1990), and the Northwest a 92% gas reduction in 1990. Small overall percentage reductions in coal use would occur in all regions except the New York/New Jersey, Southwest, and Northwest regions. The percent changes, however, are misleading in the sense that the actual amount of power generated by use of gas and oil would be a small fraction of the total, unlike coal which would account for well over half of the total (Table 4.8). Also, as was previously stated, the relative environmental impacts of coal use would be far greater than those for either oil or gas (Tables 4.9 and 4.10).

Also similar to the national case, the regional environmental effects of the CWIP rule would be predominantly beneficial due to the general decline in power generation. The large percentage reductions in oil and gas generation (Table 4.8) correspond to small reductions in actual power generated using oil and gas because the base case level of generation using these fuels is a small percentage of total generation (Table 4.8). For this reason and because of the relatively low level of environmental impact associated with these fuels, the regional changes in environmental quality would be negligible due to reductions in oil and gas use. However, because the environmental effects related to coal use are far greater in magnitude, the indicated reductions in coal generation in some regions could result in small but detectable improvement in some aspects of environmental quality, particularly in those regions with the highest percentage of coal use.

Table 4.10. Relative Environmental Impacts of Electric Power Generation (During Normal Operation)

	Relative Site-Specific Power Station Impacts†[1]				
	Coal	Gas	Hydroelectric	Nuclear	Oil
Chemical discharge	Largest†[2]	Moderate	Smallest	Moderate	Moderate
Drift (assumes use of cooling towers)	Equivalent	Equivalent	Not applicable	Equivalent	Equivalent
Electric transmission distance	Small†[3]	Small†[3]	Largest†[4]	Moderate	Small†[3]
Entrainment/impingement	Small	Small	Largest	Moderate	Small
Esthetic†[5]	Largest†[6]	Smallest†[7]	Small	Moderate	Moderate†[8]
Flood control (includes floodplain intrusion)	Largest	Smallest	Small†[5]; Benefit†[9]	Moerate	Moderate†[9]
Fog and ice (assumes presence of cooling towers, ponds, or reservoirs)	Moderate	Moderate	Small	Large	Moderate
Gaseous emissions†[10]	Largest	Smallest	Not applicable	Not applicable	Moderate
Health (to general population from emissions)	Largest	Small	Not applicable	Not applicable	Moderate
Health (includes occupational and nonoccupational deaths and impairments)	Largest	Small	Small	Small	Moderate
Historical/archeological resources (includes reservoirs and/or cooling ponds)	Moderate	Smallest	Largest†[11]	Small	Small
Land use (includes reservoirs and/or cooling ponds)	Moderate	Smallest	Largest†[11]	Small	Small
Nitrogen supersaturation (includes reservoirs and/or cooling ponds)	Small	Small	Largest	Small	Small
PSD consumption	Largest	Smallest	Not applicable	Not applicable	Moderate
Radioactive releases (includes ingestion of food grown locally in vicinity of power station)	Large†[12]	Small	Not applicable	Moderate	Small
Recreation (includes reservoirs and/or cooling ponds)	Equivalent	Equivalent	Benefit†[11]	Equivalent	Equivalent
Socioeconomic	Equivalent	Equivalent	Equivalent	Equivalent	Equivalent
Terrestrial habitat (includes reservoirs and/or cooling ponds)	Moderate†[6]	Small†[7]	Largest†[11]	Small	Small†[8]
Thermal discharge	Small	Small	Benefit†[13]	Largest	Small
Transportation	Largest†[14]	Not applicable†[15]	Not applicable	Moderate	Not applicable†[15]; Moderate†[16]
Water quality	Largest†[2]	Small	Moderate†[17]	Moderate	Small
Water use	Small†[18]	Small†[18]	Smallest†[5]; Large†[11]	Moderate	Small†[18]

Table 4.10. Continued

	Relative Fuel Cycle Component Impacts[†19]				
	Coal	Gas	Hydroelectric	Nuclear	Oil
Supply	Large[†20]	Small	Large[†11]	Moderate[†20],[†21]	Small
Transportation	Large	Small	Not applicable	Small	Small
Generation	Large	Small	Moderate	Moderate	Small
Waste disposal	Large	Small	Not applicable	Large[†22]	Small

[†1] Impacts are adverse except where "Benefit" is indicated; all impact evaluations are relative comparisons of the five generation types, and do not imply the absolute magnitude of impact.

[†2] Includes discharge of ash pond effluents.

[†3] Assumes sufficient pollution control to permit operation in urban/industrial areas.

[†4] Assumes most remaining hydroelectric capacity in remote locations.

[†5] Station physical plant only; dams, reservoirs, or cooling ponds not included.

[†6] Assumes substantial onsite coal and waste (ash) storage.

[†7] Assumes pipeline and minimal onsite storage.

[†8] Assumes pipeline and modest onsite storage.

[†9] Flood control provided by reservoirs.

[†10] Highly dependent on degree of pollution control. Assumes 2.5% sulfur coal, 1.5% sulfur oil, negligible sulfur gas, and minimal pollution control except for 97.5% fly ash removal at coal plants. Emissions from fossil-fueled emergency equipment at hydroelectric and nuclear stations are so small as to be not applicable (see Table 4.9).

[†11] Assumes large reservoirs.

[†12] Assumes that radioactivity releases from coal combustion pose a greater risk to bone than such releases from nuclear reactor operation.

[†13] Assumes cool water drawn from hypolimnion of dammed water bodies.

[†14] Excludes mine-mouth operation or coal slurry pipeline delivery; includes train, truck, or barge delivery.

[†15] Assumes pipeline delivery.

[†16] Assumes barge delivery.

[†17] Assumes adverse evaporation concentration effects behind dams in river basins subject to cyclical flow conditions.

[†18] Includes reservoirs and/or cooling ponds.

[†19] Impacts are adverse; benefits not included in evaluation of impacts.

[†20] Assumes surface mining.

[†21] Includes mining and milling impacts only; excludes potential impacts of reprocessing.

[†22] Includes potential impacts of future nuclear waste disposal.

Sources: Based on information contained in the following: AMA Council on Scientific Affairs (1978); Council on Environmental Quality (1980, 1981); Federal Energy Regulatory Commission (1980b); Hamilton and Manne (1979); McBride et al. (1978); Pochin (1980); Scott (1973); University of Oklahoma (1975); U.S. Department of Energy (1979a, 1979b, 1980b, 1981); U.S. Environmental Protection Agency (1977); U.S. Fish and Wildlife Service (1978); U.S. Nuclear Regulatory Commission (1977, 1982); Zussman and Chee (1982).

The relative environmental impacts of coal utilization are summarized in Tables 4.9 and 4.10. The small to moderate reductions in coal utilization shown in Table 4.8 would result in commensurate incremental reductions of environmental impacts in the four regions affected, and this would be environmentally beneficial. It is likely that certain site-specific, local reductions in impacts would be relatively greater than average region-wide reductions and, hence, the local environmental benefits would also be greater. However, site-specific evaluations are beyond the scope of the current assessment and are not presented herein.

Coal utilization is accompanied by perhaps the largest combined environmental impact of the five major energy types (Tables 4.9 and 4.10). The environmental benefits of reductions in coal utilization would occur in all four fuel cycle component areas, i.e., supply, transportation, generation, and waste disposal, described below.

The development and use of coal surface mines, with facilities for the beneficiation of coal, involves the disturbance of large land areas. These activities, in turn, may adversely impact occupational health, terrestrial and aquatic biotic resources, aesthetics, archaeological and historical resources, recreation, water quality, and other environmental impact subject areas.

Transportation of coal from the mines to generating stations involves the movement of substantial amounts of the fuel (e.g., over two million tons of bituminous coal per year per 1000-MWe generating station); this activity involves a range of adverse transportation impacts.

The construction and operation of coal generating stations involves a wide range of adverse environmental impacts, including most of the impact subject areas listed in Table 4.10. Of particular public concern are atmospheric emissions and their attendant impacts on public health.

Combustion of coal results in the production of large quantities of fly ash and bottom ash which must be disposed at the generation sites or transported for disposal to other locations. In addition, if sulfur dioxide scrubbers are used, large quantities of scrubber sludge are produced, which must be similarly disposed. Such waste disposal often involves the generation of environmental impact such as land disturbance, air pollution, and groundwater pollution.

In summary, the predominant environmental impacts of the final rule would result from reductions in demand and changes in fuel mix (especially, reduced coal use). These impacts, though negligible at the national level, are generally beneficial.

4.2.4 Socioeconomic Impacts

There are a number of factors to consider when evaluating socioeconomic impacts. For purposes of evaluating the FERC's inclusion of CWIP in rate base, the following factors constitute the predominant impacts that should be considered:

- The price changes to retail customers generally and to the different classes of retail customers over time.

- The effects on the proportion of household or establishment budgets allocated to electricity.

- The change in the cost of electricity relative to other items in household or establishment budgets.

- The timing of the change in FERC policy on CWIP relative to the economic situation in the nation.

The evaluation of the socioeconomic impacts in this section shall emphasize the "worst case" 6% initial rate increase per the Commission's final rule and assume that the increase is allocated equally to all retail customer classes.

The major socioeconomic impact of the FERC allowing CWIP in rate base would be the initial rise in the cost of electricity to those retail customers--residential, commercial, and industrial--of utilities that purchase some or all of their electric power from FERC-jurisdictional utilities. Nationwide, it is estimated that about 1 in 13 retail utility customers could be affected by the FERC's CWIP rule (see below). This impact is a secondary impact resulting from the pass-through of wholesale rate changes under the FERC's jurisdiction to retail customers by state and local authorities. The greatest increase would come soon after utilities began filing to include CWIP in rate base. The impacts would diminish over time. Nationally, the EIA study indicates that the impact of a 50% CWIP policy would result in average rate increases of 1.10% in 1983, 2.27% in 1985, 0.56% in 1990, and 0.69% in 1995 to wholesale customers affected by the rule (Table 4.1). The FERC study indicates an average initial rate increase to wholesale customers of 4.70%. (As indicated in Section 4.2.1 above, the EIA study understates the impact whereas the FERC study overstates the impact.) With the 6% ceiling on the initial annual rate increases attributable to CWIP per the final rule, however, these average impact estimates would be revised downward somewhat. With the 6% ceiling, the FERC study average wholesale rate impact would be reduced from 4.70 to 3.57%. As indicated below, the impacts on retail customers would vary from the impacts on wholesale customers with the average impacts generally being lower. Assuming all eligible utilities filed for and obtained the maximum CWIP allowance per the Commission's rule, only 1 in 77 retail customers would face price increases in the range of the 6% ceiling (see below). These impacts would vary regionally.

The impact of including CWIP in rate base would affect retail customers in two ways. First, if the wholesale rate were raised, utility companies that distribute power bought wholesale would pass on the increase in costs to their retail customers. On a national basis, the wholesale electric sales affected by the CWIP rule--requirements sales--account for less than 8% of all electric sales. However, on the regional or individual utility basis, greater or lesser proportions of sales are affected. Those retail customers who buy from distribution-only utilities (total-requirement wholesale customers) would experience higher increases in rates than the retail customers who purchase from utilities that produce some of their own power needs (partial-requirement wholesale customers). The purchased power cost increase to the latter would be diluted with the own-production costs in establishing rates for retail customers. Retail customers of utilities that produce all of their own electricity would not be affected by the Commission's rule.

The socioeconomic impacts are moderated significantly by the fact that a relatively small portion of electric sales, and thus customers, would be affected by the Commission's CWIP rule. Nationwide, assuming all jurisdictional utilities filed for and obtained rate base treatment of CWIP under the final rule, only 1 in 13 retail electricity customers--residential, commercial, and industrial--would be affected.* Approximately 48% of these affected customers (1 in 26 retail customers)** are customers of partial-requirement utilities so that the impacts on them would be moderated by the dilution of the purchased power cost increases with the utilities' own-production costs. Fifty-two percent of the affected customers (1 in 24 retail customers) buy their power from distribution-only (total-requirement) utilities. The average price increases to these retail customers would be about the same as those indicated above for wholesale customers, a 3.57% increase. Further, less than a third of the retail customers of distribution-only utilities (about 1 in 77 retail customers)*** would experience price increases at the level of the 6% ceiling per the final rule. The proportions of customers affected by the final rule would vary among regions.

The impact on the different classes of retail customers--residential, commercial, and industrial--may vary from this 6% increase depending upon the method of passing along wholesale rate changes used by state and local regulatory commissions and municipal and cooperative utilities. As indicated earlier, it is not practical or reasonable to evaluate the varied practices of these state and local authorities for this assessment of the Commission's rule. No survey currently exists that adequately describes these practices; nor is there any available model that could provide an indication of the range of likely outcomes. Further, given the magnitude of the likely impacts, it does not appear reasonable to devote the resources necessary to obtain the capability to evaluate these impacts more precisely.

The second channel through which retail customers could experience an impact from the Commission's final rule would be if state or local authorities followed the Commission's precedent and allowed CWIP in rate base for the utility under their jurisdiction. If this were to occur, rates for retail customers in those states or municipalities may increase beyond the estimated increases of the Commission's action.

It has been well documented that income level and energy consumption are positively correlated (e.g., Newman and Day 1975; Morrison 1979; Poyer and Teotia 1982; U.S. Dep. Energy 1982). A national survey of residential energy consumption shows that in 1980, the national average annual consumption of electricity was 8.8 thousand kilowatt-hours per household. Households with family income over $35,000 consumed more than twice the amount of electricity consumed by households with family income less than $5,000 (Table 4.11). Poor households--defined as households whose income was 125% of the census-defined poverty level--consumed an average of about 6.7 thousand kilowatt-hours per year. In 1979, about 18% of the total households in the United States had incomes at or below 125% of the poverty level.

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*This is based on assuming that the proportion of electric revenues affected by the Commission's final rule (8%, see Section 4.1) is a reasonable measure of the proportion of retail customers affected.

**This is based upon the 48%/52% split between revenues from sales to partial-requirement and total-requirement customers in 1977 (see Section 1 and Table 1.1).

***Thirty-one percent of the companies in the FERC study were predicted to have rate increases at or above the 6% level (see Section 4.2.1 and Figure 4.3).

The lower the electricity consumption, the lower the family expenditures on electricity and thus the lower the likely impact of the FERC's CWIP rule. As shown in Table 4.11, households with income levels less than $5,000 spent an average of $337 per year on electricity in 1980 whereas households with income at or above $35,000 spent an average of $727 per year. The impact of the ceiling 6% increase in electric rates on these households would be $20 and $44 per year, respectively.

Poor households, defined at 125% of the poverty level, spent an average of $378 per year on electricity and would experience an increase in annual expenditures on electricity of about $23 as a result of a 6% increase in electric rates. Despite the lower electricity consumption and expenditures in poor households, however, a larger proportion of their total budget goes to pay electric bills. The average percentage of all households' income spent on electricity is about 2.8%. Low-income households spend an average of 10.6%.* It is estimated that for those households that get a 6% increase in electric rates, the percentage of the average household's budget spent on electricity would increase by about 0.2%; the increase for the low-income household would be about 0.7%.

There are regional differences in electricity consumption patterns and price levels (Table 4.12) and in impacts due to the final Commission rule. Consumption levels are highest in the South where prices are relatively low. The Northeast has the lowest consumption levels and the highest price levels. Annual expenditure levels per household are highest in the South and lowest in the West.

It is estimated that 1 in 10 households in the Northeast census region would be affected by the Commission's CWIP rule.** The proportion of households affected in the North Central, South, and West census regions would be 1 in 11, 1 in 13, and 1 in 26, respectively. Significantly lower proportions of households in each region, however, would have the potential of experiencing price increases at the initial ceiling of 6%. The Northeast region, where average electricity prices are highest (Table 4.11), would have the greatest

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*Derived from 1980 data in two studies (U.S. Dep. Energy 1980a, 1982). "Low income" households, as distinct from "poor" households for which these data are unavailable, are defined as households with incomes below 125% of the census-defined poverty level combined with elderly households with incomes below 150% of the poverty level.

**These statistics are derived by allocating the estimated number of retail customers affected nationwide across regions based upon approximate percentages of requirements sales revenues in each census region (Table 4.12 and Energy Inf. Admin. 1977).

Table 4.11. U.S. Residential Electricity Consumption and Expenditures by Family Income Level, 1980

	Number of Households (million)	Average Annual Consumption per Household (thousand kWh)	Average Annual Expenditures per Household ($)	Increase in Annual Expenditures Due to 6% Increase in Electric Rates ($)
Total Households:	81.6	8.8	$492	$30
1979 Family Income:				
Less than $5000	10.4	5.9	337	20
$ 5,000 to 9,999	13.8	6.9	383	23
$10,000 to 14,999	13.8	7.7	432	26
$15,000 to 19,999	11.9	9.1	501	30
$20,000 to 24,999	9.9	10.2	553	33
$25,000 to 34,999	12.4	10.5	572	34
$35,000 or more	9.4	12.7	727	44
Total Poor*:				
100% Level	10.9	6.8	381	23
125% Level	14.7	6.7	378	23

*"Total Poor (100% Level)" defines a group of households with incomes below the poverty level defined by the U.S. Bureau of the Census. "Total Poor (125% Level)" defines a group of households with incomes of 125% of the poverty level. This group of poor and near poor represent an alternative level for defining poverty. The definitions of poor are based on the number of family members in the household and family income.

Source: U.S. Department of Energy (1982).

Table 4.12. U.S. Residential Electricity Consumption and Expenditures by Census Region, 1980

	Number of Households (million)	Average Annual Consumption per Household (thousand kWh)	Average Price (cents/kWh)	Average Annual Expenditures per Household ($)	Increase in Annual Expenditures Due to 6% Increase in Electric Rates ($)
Total Households	81.6	8.8	5.6	$492	$30
Census Region:*					
Northeast	17.7	6.5	7.5	487	29
New England	4.3	6.5	7.5	487	29
Middle Atlantic	13.4	6.5	7.5	487	29
North Central	21.1	8.3	5.5	458	27
East North Central	14.8	8.0	5.6	447	27
West North Central	6.3	9.1	5.3	485	29
South	26.9	11.5	5.2	593	36
South Atlantic	14.0	10.8	5.5	604	36
East South Central	5.1	13.7	4.3	592	36
West South Central	7.7	11.2	5.1	572	34
West	15.9	7.6	4.9	371	22
Mountain	4.1	7.9	5.3	416	25
Pacific	11.8	7.5	4.8	356	21

*States included in each census region:

New England--Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont; Middle Atlantic--New Jersey, New York, Pennsylvania; East North Central --Illinois, Indiana, Michigan, Ohio, Wisconsin; West North Central--Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota; South Atlantic--Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia; East South Central--Alabama, Kentucky, Mississippi, Tennessee; West South Central--Arkansas, Louisiana, Oklahoma, Texas; Mountain--Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming; Pacific --California, Oregon, Washington.

Source: U.S. Department of Energy (1982).

proportion of households potentially experiencing 6% rate increases, 1 in 46 households.* The proportion of households that may experience 6% rate increases in the North Central, South, and West census regions would be 1 in 88, 1 in 76, and 1 in 178 households, respectively. The increase in annual household expenditures due to a 6% increase in electric rates is presented by region in Table 4.12.

Another study (Poyer and Teotia 1982) shows significant regional differences in the consumption levels between all households and low-income households. The average electricity consumption levels in 1979 by all households in the Northeast, North Central, South, and West census regions were 6.4, 8.2, 11.7, and 10.0 thousand kilowatt-hours, respectively (derived from data in Poyer and Teotia 1982). For low-income households, the average consumption levels in these regions were 4.7, 7.4, 7.9, and 10.3 thousand kilowatt-hours, respectively. According to this study, low-income households in the West tend to consume amounts of energy comparable to all other households in the West and consume more than households in all other regions. In the South, which has a greater concentration of low-income households than other regions (U.S. Bur. Census 1981), low-income households have significantly lower consumption levels than all households. The average increase in the annual electric bills of low-income households due to a 6% increase in electric rates would be $21, $16, $25, and $30 in the Northeast, North Central, South, and West Census regions, respectively (derived from the average price data in Table 4.11 and the average consumption levels from Poyer and Teotia 1982).

The average impacts within any region should be small. The vast majority of affected residential consumers in all regions would be able to adjust their budgets and/or increase conservation to offset these impacts. Poor households--about 18% of all households--without such flexibility may not be able to offset the increased bills as easily. It is possible that some small percentage of marginal-income households could be adversely affected. Quantification of this impact on low-income households, however, is not possible.

Industrial customers may also be affected by the 50% CWIP policy. The proportions of industrial customers potentially affected by the CWIP rule both nationwide and across regions would be similar to those indicated above for households. Although electricity consumption makes up only about 9.2% (1979 and 1980--U.S. Bur. Census 1981) of total energy consumption by all industries, some industries use far more than others. Particularly dependent on electricity for their production processes are primary metal industries, which used about 20% of all electricity sold to industry in 1978, and chemical industries which consumed about 18% (calculated from statistics in Yanchar and Bartelsman 1981; U.S. Bur. Census 1981). Electricity consumption represents about 13% and 11%, respectively, of total energy consumption of these two industries (calculated from statistics in Yanchar and Bartelsman 1981). Other industries (e.g., food; paper; petroleum refining; and stone, clay, and glass industries), although smaller users of the total amount of electricity going to industry, are reliant on this energy form for direct heat and machine drive processes (Yanchar and Bartelsman 1981; Chern et al. 1978).

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*These statistics are derived by allocating the estimated number of retail customers of distribution-only utilities across regions based upon approximate percentages of total-requirement sales revenues in each census region and then applying the FERC study's estimate of the proportion of utilities that could obtain the 6% initial ceiling on rate increases (31%) (Table 4.12 and Energy Inf. Admin. 1977).

Data Resources, Inc. (1982) has projected that by the year 2000, industrial consumption of direct fuels per unit of output will drop to 72% of 1980 levels. Over the same period, consumption of purchased electricity per unit of output will remain fairly constant. The shift out of direct fuels and into purchased electricity will virtually offset the negative impacts on electric intensity from price-induced conservation and increases in efficiency (Yanchar and Bartelsman 1981).

Historically, industry on the average has paid less per kilowatt-hour for electricity than residential and commercial customers although in recent years, the gap has narrowed (U.S. Bur. Census 1981). Additionally, a rate increase caused by including CWIP in rate base would affect mainly the fixed component of electric rates, rather than fluctuating with production. Because of these two factors, CWIP-related rate increases would likely have less impact on industrial customers as compared to residential and commercial customers. Impacts would occur primarily in the initial stages, i.e., up to 1985, with minor adjustments to the overall increased bills occurring after that time. However, there are two exceptions to this general statement.

First, if state or municipal authorities decide to pass on more of the cost increases of the utilities to industry than to other customers, industry would feel a greater impact. Second, although in general impacts would be slight to industry (even assuming maximum national rate increases were allocated equally among classes), this may be less true in specific cases. Although still slight, dollar impacts would be relatively greater on those industrial sectors most dependent on electricity, i.e., primary metals and chemical industries. In general, companies in these industrial sectors would probably be able to adjust to the increased costs through greater conservation. However, smaller companies--with high electricity intensity relative to output--that are currently struggling may have more difficulty.

Commercial operations are reliant on electricity primarily for lighting (43% of total electricity consumption in 1975) and air conditioning (36% of total in 1975) (Chern et al. 1978). Electricity consumption was about 11% of their total energy consumption in 1980, up from 10.3% of the total in 1979 (calculated from statistics in U.S. Bur. Census 1981). Through increased conservation and financial adjustments, most commercial operations could adjust to the impacts of the projected rate increases. However, some smaller operations--which are more dependent on electricity as a percentage of their costs, are less flexible in their budget, and have lower profit margins--would be more strained by the increases. As with industrial customers, the proportions of commercial customers potentially affected by the FERC's CWIP rule would be similar to those indicated above for households.

The increases in rates to customers must be presented in the context of past and projected price changes in other items. Since 1967, electricity costs have risen nearly 300% (Consumer Price Index [CPI] = 281.9, where 1967 = 100), approximately the same as the increase in food (267.7) and housing (308.4) prices (U.S. Bur. Census 1981). The overall CPI at 269.0 since 1967 was slightly lower than that for electricity (U.S. Bur. Census 1981). The percent cost increases due to CWIP in rate base would be very small relative to the increases in costs of electricity and other commodities over the past 15 years.

Estimates of future patterns in prices for these items are more varied. Annual increases in the CPIs of energy, food, housing, and apparel are expected to continue, affecting demand for these items (Data Resour. Inc. 1982). Projections of the price of electricity for residential customers in 1980 dollars (assuming rate structures similar to those at present) show gradual annual increases of about 1¢/kWh, whereas natural gas prices are projected to increase about seven-fold by 1995. Increases in oil prices would fall somewhere between. These price changes are reflected in projected consumption--i.e., annual increases in electricity purchases, drops in natural gas purchases (Data Resour. Inc. 1981). The pattern of increase in electricity purchases would probably be more evident in middle- and high-income households than in lower-income households. However if the 50% CWIP policy were instituted, increasing prices above these projections, electricity expenditures would probably decrease only slightly relative to consumption of other items. Cost increases from incorporating CWIP at any level into the rate base would be small enough relative to other cost increases so as to have little effect on overall customer demand. In the specific case of low-income households, demand for all items--including electricity--may drop as a result of higher costs.

A sudden and unexpected increase in costs--no matter how small--is burdensome at any time, expecially on low-income persons and on struggling commercial and industrial operations, but such an increase would be magnified in a recessionary period. Although the percent increase would be small, those operations and families with little or no flexibility in their budgets would suffer greater consequences in a recessionary period than during a period when financial aids, e.g., loans or subsidies, were easier to obtain. Low-income customers also have fewer economic resources to invest in conservation or substitute energy sources, as well as less latitude to reduce use (Morrison 1979; U.S. Dep. Energy 1980a; Ill. Commerc. Comm. 1982, Poyer and Teotia 1982). Conversely, if a cost increase occurred in a prosperous economic period, adjustment to cost increases would be accomplished more easily.

In conclusion, although existing models and data gaps did not allow precise regional quantification of the allocation among customer classes and resulting effects of estimated CWIP-related rate increases, it is clear that average national and regional socioeconomic impacts of the incorporation of 50% CWIP in rate base would be minor in terms of the number of customers affected and the percent increases in prices for all classes of customers: residential, commercial, and industrial. However, the impacts would be felt unequally among regions and within customer classes. Low-income households, which already spend a larger percentage of their total income on electricity, would experience more strain on their less flexible budgets than would other households. Similarly, smaller financially stressed industrial and commercial operations as well as industries more dependent on electricity would also have more difficulty with even the small projected increases than would larger less electricity-intensive operations. Although it is conceivable that a small number of households or businesses could be adversely affected, the overall regional and national effects would not be significant.

4.2.5 Price Squeeze Impacts

A price squeeze has been said to occur "... when an electric utility that sells at both wholesale and retail price discriminates against its wholesale customer creating the potential for an anticompetitive effect because the wholesale customer is inhibited in its ability to compete at the retail level against its wholesale supplier" (Holmes 1982). The Commission has defined price discrimination as "a difference in price not based on a difference in costs" (Fed. Energy Reg. Comm. 1980a). Thus, it is clear that a price discrimination analysis must consider not only wholesale and retail rates, but also the costs underlying the rates.

As has been stated elsewhere in this assessment, the inclusion of 50% CWIP in rate base would result in a higher increase in the rates of wholesale customers than would occur in the absence of CWIP. However, this in itself would not necessarily lead to price squeeze impacts. Price discrimination must exist before there can be a price squeeze. Any effect that CWIP would have relative to price squeeze would occur as a result of the changed relationship between wholesale rates in relation to wholesale costs as compared to the posture of retail rates and costs.

There are three major potential impacts that the inclusion of 50% CWIP in rate base could have relative to the existence of price discrimination in a particular case:

1. Maintain the status of no price discrimination in a situation where there was no price discrimination without CWIP.

2. Bring about price discrimination in a situation where there was no price discrimination without CWIP.

3. Increase the magnitude of price discrimination in a situation where there was already price discrimination without CWIP.

Which of the three impacts is likely to occur in a given situation cannot be predicted in advance without having detailed information regarding both wholesale and retail rates and costs. Only two generalizations can be made without case-specific information. First, the closer a utility was to price discrimination without CWIP, the more likely that CWIP would result in price discrimination. Second, if price discrimination existed without CWIP, its magnitude would be increased by CWIP.

In an effort to evaluate what would happen in specific instances for specific utilities, a simulation analysis was carried out using rate case information from five cases in which price squeeze had been alleged by municipal or cooperative intervenors.* Eleven different price discrimination comparisons were performed because some of the cases involved more than one wholesale rate, more than one retail rate, or more than one time period.

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*Internal staff analysis based on test period compliance cost-of-service data or staff cost-of-service data available to staff.

The simulation involved doing each of the 11 wholesale and retail rate and cost comparisons twice--once without CWIP in the jurisdicational rate base and once including 50% CWIP in the jurisdicational rate base. The criterion used for determining whether price discrimination existed was a comparison of earned rate of return on rate base for the relevant retail class of service and allowed rate of return for the wholesale class. If the rate of return for the retail class is lower than for the wholesale class, price discrimination is indicated. The Commission has used this methodology in price squeeze decisions to date, and it has been affirmed by the courts.

The major results of the simulation analysis are as follows:

1. In none of the cases or price discrimination comparisons did the inclusion of CWIP create price discrimination where it did not exist without CWIP.

2. In two cases and three comparisons, price discrimination was indicated both with and without CWIP. In all three comparisons, the inclusion of CWIP increased the magnitude of price discrimination as measured by the absolute change in the difference in rate of return between the wholesale class and the retail class. The change in the difference between wholesale and retail rates of return was less than one percentage point in all three comparisons.

3. In all three cases and eight comparisons where there was no price discrimination both with and without CWIP (i.e., retail return was higher than wholesale return), the inclusion of CWIP brought the retail and wholesale returns closer to parity. The change in the difference between wholesale and retail rates of return was less than one percentage point in seven comparisons and 7.26 percentage points in the other comparisons.

As indicated, this analysis assumed that 50% CWIP would be included in the jurisdictional rate base. Of course, the lower the amount of CWIP permitted in the rate base, the smaller the likelihood that price discrimination would be created and the smaller the amount of any increased magnitude of price discrimination that would occur. The converse would be true if more than 50% CWIP were included in the rate base. The likelihood of price discrimination is further lessened by the 6% ceiling on initial rate increases per the final rule.

There appears to be no evidence to indicate that the inclusion of up to 50% CWIP in rate base would have a significant impact on the existence of price squeeze in the electric utility industry.

4.3 IMPACT OF ALTERNATIVE POLICIES

4.3.1 Other Uniform Percentages of CWIP

The EIA and FERC studies also included estimates of the impacts of different percentages of CWIP, specifically 100% CWIP, as a representation of the maximum impact any CWIP policy could have.

The price and demand impacts of the 100% CWIP case would be more than double those of the 50% CWIP case according to the EIA study. The effects on investment decisions and fuel use would be similar to the 11% CWIP case described earlier (Table 4.7) if state and local commissions did not follow the Commission's 100% CWIP policy; otherwise, the reduction in use of fossil fuels would be larger than in the 50% CWIP case (Table 4.8).

With a 100% CWIP policy, the jurisdictional portion of the utilities' operations would improve its cash flow by almost twice that of the 50% CWIP case. For the whole company, the impact would be much smaller. The increase in cash flow would also result in improvement of other financial variables of the company.

The FERC study estimates that with 100% CWIP in rate base, the impacts on prices and cash flow are about double those of the 50% CWIP case. Similar statements would apply to the impacts on the various financial ratios examined in the FERC study.

4.3.2 CWIP Screening Options

The FERC model has been used to evaluate the number of companies that would qualify under various two-pronged screening approaches of the type proposed in the NOPR and described in Section 2. These results are presented in Table 4.13. For example, 13 of 134 utilities would qualify for CWIP inclusion on the basis of having bond ratings of BBB or lower and CWIP in excess of 40% of the rate base.* By varying either of the two screening criteria--raising the maximum bond rating or changing the percentage of CWIP to rate base required to trigger operation of the rule--differing numbers of utilities would qualify for inclusion of CWIP in rate base. For example, by reducing the second-prong threshold level to 20% and holding the bond criterion at BBB, the number of eligible companies would increase to 30. Similarly, by substituting a new criterion for the first prong--e.g., a market-to-book criterion of 0.8--25 of 94 utilities would be eligible for CWIP in rate base, holding the second prong constant. In general, the number of qualifying companies would increase as one or both of the screening criteria were relaxed (Table 4.8).

The amount of CWIP allowed in the rate base and the resulting impacts (on rates, cash flow, etc.) under the various screening options would vary among utilities. The mean and standard deviation of the percentage of CWIP allowed in the rate base of utilities qualifying under different screening criteria are presented in Table 4.14. Although there are exceptions, in general it appears that the average amount of CWIP allowed in rate base would decrease as the first-prong criterion was relaxed. This is consistent with the thesis that CWIP has had important effects on the financial condition of utilities as measured by these first-prong financial indicators since relaxing the first-prong criterion would qualify companies with lower and lower amounts of CWIP outstanding to obtain CWIP relief.

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*It should be noted that no distinction was made in the screening process between utilities that have sales regulated by the Commission and those that do not. Also, the sample of companies used in the study does not include all companies with sales regulated by the Commission.

Table 4.13. Number of Utilities Qualifying for CWIP Inclusion Under Alternative Screening Policy Options

First-Prong Criterion	Number of Qualifying Companies per Second-Prong Criterion: CWIP in Excess of X% of Rate Base: 60%	40%	20%	0%	Sample Size*
Maximum Bond Rating:					
BBB+	8	13	30	43	134
A+	15	27	61	95	134
AA+	21	39	84	131	134
Maximum Market-to-Book Ratio:					
0.8	14	25	48	66	94
1.0	19	34	64	89	94
1.2	19	34	64	93	94
Maximum Internal Cash Flow to Total Sources of Funds Ratio:					
0.30	10	16	22	25	141
0.40	16	28	45	49	141
0.50	21	37	70	84	141
Maximum Before-Tax Interest Coverage Ratio (Actual):					
2.0	15	25	45	57	139
3.0	20	37	76	106	139
4.0	21	42	86	132	139
Maximum Before-Tax Interest Coverage Ratio (Hypothetical, Definition 1):					
2.0	6	9	12	15	139
3.0	21	37	66	82	139
4.0	21	42	87	125	139

*Sample size varies due to data availability. Study is based upon 1980 data.

Source: Federal Energy Regulatory Commission (1982).

Table 4.14. Percent CWIP Allowed in Rate Base
Under the Two-Pronged Test

	CWIP to Net Plant Percent as Second Prong					
	20%		40%		60%	
First-Prong Criterion	Mean	S.D.	Mean	S.D.	Mean	S.D.
Maximum Bond Rating:						
BBB+	38.44	21.25	28.99	14.0	17.59	13.05
A+	38.06	19.73	25.46	12.92	14.17	10.89
AA+	38.47	19.68	25.25	13.08	14.58	10.90
Maximum Market-to-Book Ratio:						
0.8	41.06	18.88	25.06	11.23	11.76	8.66
1.0	41.55	19.20	26.19	12.45	14.45	10.92
1.2	41.55	19.20	26.19	12.45	14.45	10.92
Maximum Internal Cash Flow to Total Sources of Funds Ratio:						
0.30	50.06	17.11	29.21	13.35	17.60	10.76
0.40	45.36	18.49	27.24	13.02	15.79	12.05
0.50	41.55	18.91	26.20	12.70	14.58	10.90
Maximum Before-Tax Interest Coverage Ratio (Actual):						
2.0	41.96	19.36	25.86	12.34	12.68	10.62
3.0	39.32	19.82	25.78	12.89	15.05	10.96
4.0	38.85	19.55	24.36	13.00	14.58	10.90
Maximum Before-Tax Interest Coverage Ratio (Hypothetical, Definition 1):						
2.0	50.43	21.49	34.10	13.85	22.95	14.25
3.0	42.99	18.74	26.08	12.81	14.58	10.90
4.0	38.84	19.43	24.36	13.00	14.58	10.90

Abbreviations: S.D. = Standard deviation

Source: Federal Energy Regulatory Commission (1982).

4.3.3 Allow New CWIP Only

The results of EIA's study of allowing 50% and 100% new CWIP are summarized in Table 4.15. (New CWIP is defined as the construction expenditures made during the test year that is used in setting rates.) In general, in the early years of the policy implementation, the impacts of this alternative would be smaller than those of allowing 50% and 100% total CWIP because the amount of CWIP entering the rate base would be small compared to total CWIP--the sum of new CWIP and old CWIP. However, in the later period of the studies, the impacts would be similar because a major portion of the total CWIP would be new CWIP.

At the national level, the price impact of 50% new CWIP would be neglible in 1983 and would be 1.0%, 0.76%, and 1.03% above the base case in 1985, 1990, and 1995, respectively. The utilities would improve their cash flow by 0.45%, 5.23%, 4.30%, and 4.47%, respectively, in the same period. As expected, 100% CWIP would result in a greater improvement of the utilities' financial condition than 50% CWIP; similarly, the impact on customers would be larger. Impacts on customers and utilities would vary widely among regions (see Table 4.15).

4.3.4 Allow Only Debt or Equity Expenses Associated with CWIP

One proposal made in this rulemaking* would include only the interest cost of debt used to finance CWIP in rates. Another proposal** would include only the common equity costs associated with CWIP in rate base. This section discusses the impacts of these and similar proposals.

The reasoning behind the interest cost proposal is based on criteria mechanics of ratemaking. For every additional dollar of equity return, allowed rates are increased by two dollars so that the utility will, after taxes, net one dollar. Ratepayers pay two dollars to give investors one dollar; the other dollar goes to the U.S. Treasury. (This analysis assumes an income tax rate of 50%.) In contrast, since interest expenses are a deduction for tax purposes, no additional dollar need be allowed in rates in order that the utility net the dollar for interest expenses. Thus, if only the interest expense portion of CWIP financing is allowed in rates, the rates would rise by only that amount.

Presumably, the intent of this policy is to allow utilities to recover CWIP-related interest expenses. It should be noted, however, that this result occurs only when the tax effects of these interest expenses are initially normalized. With a 50% tax rate, the tax normalization policy provides utilities, through deferred taxes, with additional cash flow to pay half of these expenses. Allowing interest expenses in rates changes the deferred taxes to current taxes and raises rates to permit the utility to recover both the additional taxes and the interest expenses.

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*See transcript of open hearings held December 7 and 8, 1981, Docket No. RM81-38, pp. 7-30.

**Comments of Arthur Andersen & Company, Docket No. RM81-38, October 30, 1981, pp. 2-4.

Table 4.15. Impact on Customers and Utilities of Allowing a Uniform Percentage of New CWIP in Rate Base

	% Impact			
Financial Impact	1983	1985	1990	1995
Percent Change in Price:				
50% CWIP				
National	NC*	1.0	0.76	1.03
Regional - High	1.46	6.36	4.60	4.51
Low	-1.96	-2.21	-1.01	-1.13
100% CWIP				
National	0.70	3.9	2.81	2.68
Regional - High	2.02	12.35	9.22	8.30
Low	-0.85	2.02	-2.14	-0.80
Percent Change in Cash Flow:				
50% CWIP				
National	0.45	5.23	4.30	4.47
Regional - High	5.35	19.38	13.19	16.47
Low	-4.66	-2.37	-4.44	-1.17
100% CWIP				
National	3.12	15.38	12.98	15.14
Regional - High	7.93	39.65	28.25	28.11
Low	-1.76	6.09	-2.69	-2.28
Internal Cash Flow as a Percent of Construction Expenditures:				
Base	33.24	36.0	45.06	41.61
50% CWIP	35.60	42.44	50.68	45.87
100% CWIP	41.46	54.51	57.99	53.55
Before-Tax Interest Coverage:				
Base	2.16	2.12	2.12	2.17
50% CWIP	2.20	2.31	2.43	2.39
100% CWIP	2.33	2.70	2.91	2.90
Rate of Return on Common Equity:				
Allowed	16.7	14.9	14.6	13.1
Base	13.6	14.2	14.7	14.0
50% CWIP	12.8	13.6	14.5	14.2
100% CWIP	11.83	13.04	15.0	14.7

*NC = Negligible change.

Source: Energy Information Administration (1982b).

In contrast, if a flow-through policy were in effect prior to including the CWIP-related interest expenses in rates, the result of computing rates in the manner described above would be to allow current recovery of only half of those expenses. This is because the policy would change neither the company's actual interest expenses nor the amount of interest expenses that could be deducted for tax purposes. From the U.S. Treasury point of view, every dollar of additional revenues not accompanied by additional deductible expenses is taxable. The increase in rates would be accompanied by an additional tax liability that would reduce the net cash flow available to pay the interest expenses. The reason this does not occur when tax normalization is initially used is because tax normalization has already provided the cash flow to pay half the interest expenses.

The rationale for the second proposal--to include the equity costs associated with CWIP in rates--is based upon the accounting and financial effects of AFUDC on earnings. The net earnings of a company consist of cash earnings on the equity-financed portion of rate base plus noncash (equity AFUDC) earnings on the equity-financed portion of CWIP. Noncash earnings are alleged to be of inferior quality to cash earnings. When the noncash component of utility earnings increases, as has occurred dramatically over the recent past, utilities are perceived to be more risky. Thus, including the equity portion of AFUDC in rates would be expected to improve the quality of earnings as reported in the books of utilities.

The approach taken to evaluate these and similar policies is to compare the initial rate and cash flow impacts implied by these policies with the proposed policy, which would include 50% CWIP in rate base. For these impacts, the same methods and assumptions used in the FERC study (Fed. Energy Reg. Comm. 1981b), applied to aggregate 1980 data for Class A and B utilities, are used here. Setting the rate impact of 50% CWIP in rate base at 100%, these various policies are estimated to have relative rate impacts as presented in Table 4.16.

The same relative comparisons would also be true of the initial cash flow impacts since they are, in general, equal to the rate impacts less the additional taxes (which are a constant percent of the rate impact).

4.3.5 CWIP Allowance Based on the Relationship Between CWIP and the Rate Base

Two approaches are considered here: (1) allowing CWIP up to a certain percentage of rate base, and (2) allowing CWIP in excess of a certain percentage of rate base.

The first approach--allowing CWIP up to a certain percentage of rate base--is used by the Wisconsin Public Service Commission.* The rationale for the ceiling appears to be to discourage excessive investment in plants not currently providing service.

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*In recent cases, the Wisconsin Commission allowed CWIP up to 20% of rate base. In addition, for the CWIP in excess of that ceiling, a 7% return is capitalized as AFUDC with the difference between 7% and actual carrying costs reflected in rates.

Table 4.16. Comparative Initial Rate Impacts of Various CWIP Policies

Policy Option	Initial Rate Impact Compared to 50% CWIP Policy
Include CWIP-related debt expenses	63*
Include CWIP-related debt and preferred stock expenses	84
Proposed action: include 50% CWIP in rate base	100
Include CWIP-related common equity costs	112
Include CWIP-related common and preferred stock expenses	133

*For example, a policy including only the CWIP-related debt expenses in rates would result in an initial rate impact that is 63% as large as that resulting from including 50% CWIP in rate base (the proposed action).

Because of the inability of the models used for this study to evaluate this alternative, an indirect approach using the results of the EIA "uniform percentage CWIP" analyses was chosen. This approach consisted of computing, for each case studied, the percentage that the allowed CWIP was to rate base. These percentages are shown in Table 4.17. On the national level over the period studied, the impacts of allowing CWIP up to 20% of rate base would be similar to the proposed action of including 50% CWIP in rate base which is discussed in Section 4.2. Some indication of the impacts of including CWIP up to different percentages of rate base can thus be inferred from the EIA study results.

The second alternative--allowing CWIP in excess of a certain percentage of rate base--is essentially the second-prong test of the screening options. The rationale for this form of partial inclusion would be that some amount of CWIP is part of the normal operations of a utility and that a utility should not experience any difficulty financing CWIP as long as it is less than a certain percentage of rate base.

To evaluate the impacts of this alternative, the FERC model was applied to 1980 data, with the first prong set to a maximum that would include all companies with adequate data--a sample size of 141 companies. From that sample, if all CWIP was allowed in excess of 20% of rate base, 87 companies would obtain CWIP relief. The average percentage of CWIP that would be allowed is 38.8%, with a standard deviation of 19.4. With the second-prong criterion set at 40%, 42 companies would qualify and obtain, on average, 24.4%

Table 4.17. CWIP Allowed as a Percentage of Rate Base for the Four CWIP Scenarios: Base Case, 11%, 50%, and 100%

Region	CWIP Allowed as a Percent of Rate Base for Four CWIP Scenarios											
	Base			11%			50%			100%		
	1985	1990	1995	1985	1990	1995	1985	1990	1995	1985	1990	1995
National	8	8	9	13	12	13	20	18	19	33	32	35
Northeast	9	1	2	17	3	3	32	5	8	49	12	16
New York/ New Jersey	9	6	8	12	8	11	16	11	15	28	20	27
Middle Atlantic	5	5	5	8	9	9	15	17	16	26	28	29
South Atlantic	5	4	5	10	8	9	21	17	19	35	31	33
Midwest	8	6	6	13	9	10	22	16	18	34	33	35
Southwest	21	22	20	25	27	26	26	29	27	41	46	45
Central	< 1	< 1	< 1	< 1	7	6	2	25	24	3	41	41
North Central	26	22	22	30	28	28	26	28	27	38	51	49
West	< 1	< 1	< 1	5	2	2	17	6	9	30	12	17
Northwest	< 1	< 1	< 1	5	4	4	18	16	18	30	28	31

Source: Energy Information Administration (1982b).

CWIP in rate base (standard deviation of 13.0). A 60% criterion results in 21 qualifying companies and an average CWIP allowance of 14.6% (standard deviation of 10.9).

4.3.6 Contributions in Aid of Construction and Capital Certificates Options

Two alternatives to including CWIP in rate base are contributions in aid of construction and capital certificates. The amount of customer-supplied capital under either of these alternatives would presumably be based on the collections necessary for the utility to have the same cash flow position as it would have with CWIP included in the rate base.

Contributions in aid of construction are funds supplied by customers to finance some or all of the cost of construction of new facilities. The cost of the facilities financed by contributions are not capitalized. Therefore, after the period that contributions are made, ratepayers benefit by the utility having a lower rate base and a resultant lower cost of service than it would have under conventional ratemaking practices. The potential benefit to customers under this alternative as compared to including CWIP in rate base is dependent upon a favorable income tax treatment of the contribution, i.e., the contributions must not be taxable income to the utility because the cash outlays of the customer would essentially be equal in amounts and timing to the outlays that customers would make if CWIP were included in the rate base. If the contributions are nontaxable, the customer may realize a savings due to the time value of money. The time-value savings would result from customers paying lower utility bills during the period that facilities are constructed than they would if CWIP were included in the rate base because the utility's cash needs for tax payments during such period would be lower. During the period that the facilities are in-service, however, a higher bill would result because, under the contribution alternative, customers would pay less for the cost of the plant during construction and this must be made up over its service life. The loss of investment tax credits is an additional factor that must be considered in any analysis of the benefits of the contribution alternative. If the contributions are found to be nontaxable to the utility, the plant financed by such contributions would not become part of the property basis eligible for investment tax credit. These valuable tax benefits are shared with ratepayers and the loss thereof could conceivably more than offset the time-value savings of the contribution alternative.

Capital certificates, for purposes of this analysis, are interest-bearing securities issued by utilities to ratepayers for the amount of additional cash provided through utility bills that is necessary for the utility to have the same cash position it would have if CWIP were included in the rate base. Once the plant goes into service, these capital certificates would be replaced by the utility with permanent financing (stocks and bonds), and the certificates would be redeemed. The basic theory behind the capital certificate alternative is that it would give the utility, by mandatory ratepayer loans, the cash it needs during the construction period while properly assigning the cost of facilities to the periods during which they are providing service. The attraction of this option is that it provides customers with certificates that enable them to get their CWIP-related payments back in the event they leave the system prior to plant completion. In comparison to including CWIP in rate base, the time pattern of rates (including the certificate loans from customers) to customers under the certificates option would be identical (assuming the certificates are costed at the after-tax cost of capital of utilities and assuming no additional administrative costs).

4.3.7 Allow Higher Rates of Return

Allowing higher rates of return on common equity is an alternative to including CWIP in rate base. The difference in the two policies is that the latter would simply reallocate over time the manner in which utilites may recover a certain cost--construction carrying charges--in rates whereas the former would involve increasing for all time the amount that utilities are entitled to recover from their customers.

Neither the EIA nor the FERC study directly addressed the impact of allowing a higher rate of return on common equity, although the FERC study may be utilized to address this issue indirectly. The actual earned rate of return for most electric utilities in the sample utilized for the FERC study was lower than the allowed rate of return. When the electric utilities were able to earn allowed rates of return, their cash flow and hence their interest coverage ratio improved significantly. As indicated in Section 4.2.2, the average interest coverage ratio of the 141 company sample would increase from the actual 2.40 times to 2.90 or 2.74 times (depending on which hypothetical ratio was used) when the companies earned returns at the levels of allowed returns assumed in the study (see Section 4.1.2). These increases in coverage ratios would approximate the increase resulting from the proposed action of including 50% CWIP in rate base (from 2.40 times to 2.78 times).

A Southwest Energy Associates study (see Section 4.4.1) also provides some insight into the rate of return alternative. In addition to evaluating the inclusion of CWIP in rate base, the study examined a policy of allowing a premium on the market required rate of return on common equity to counter attrition and enable utilities to earn this market rate. A historical test year was assumed in setting rates, and premiums of 2% and 4% were considered under alternative assumptions of 7% and 9% inflation. The study found that a 4% premium came closest to enabling the industry to earn the targeted market required rate. The 4% premium would initially cause prices to increase 5% to 7% above the base case with no premium. However, because of demand interactions and resulting lower usage of high-priced oil and gas, the 4% premium prices would come closer to base case prices over time. By the year 2000, the 4% premium prices would be less than 2% higher than base case prices. However, the study found that the increased cash flow resulting from the higher earned rates of return would lead to only modest reductions in external financing needs. (The study found that a 50% CWIP policy would initially reduce external financing requirements as a percent of construction expenditures from 78.7% to 68.6%. In constrast, a 4% premium on the rate of return on common equity would reduce this percentage to 74.7%.)

An analysis similar to the above was performed on two individual utilities by Argonne National Laboratory (see Section 4.4.2). Because of the mechanics of the model used in this analysis, allowed and earned returns were assumed to be equal. However, like the previous study, this study examined the effects of allowing 2% and 4% premiums on the market required rates of return on common equity. Only the price impacts are reported in any detail. For one utility, a Midwestern utility, a 4% premium would increase prices initially by about 6% above the base case with no premium. Throughout the study period (1982-2000), prices of the 4% premium case remain between 5% and 7% above the base case prices. In contrast to the previous study, the effects of price changes on demand were not incorporated in the model. For the second utility studied, a Southeastern utility, the impact on price of the 4% premium is, in general, about half that for the Midwestern utility. The reason given for this result is that capital-related expenses constitute a smaller fraction of the total costs for the Southeastern utility.

4.3.8 Follow State Commission Policies

In this alternative, the percentage of CWIP allowed by the Commission would be the same as that permitted by the state public utility commissions. Because state CWIP policy is not uniform, it is difficult at this time to project what policy the Commission would be following. Therefore, a generic impact analysis is not possible. However, in this report, the impacts of various alternatives on the jurisdictional customers and jurisdictional portion of the company have been presented. If state regulators follow similar policies as discussed herein, the resulting impacts of the Commission following these policies would be similar to those discussed in previous sections of this report. For example, the impact of following a state 50% CWIP policy would be similar to the alternative of the Commission allowing 50% jurisdictional CWIP in the jurisdictional rate base.

4.3.9 Environmental Impacts

Environmental impact evaluations in Section 4.2.3 emphasized analysis of the 50% CWIP case. The effects of a 100% CWIP case were also examined and are briefly summarized below. Because the economic and subsequent environmental impacts of all alternatives considered would fall within the range of impacts identified for the uniform-percentage CWIP policies analyzed, it is not considered necessary to attempt to discuss the environmental effects of each individual alternative considered in the economic analyses.

Environmental impacts related to a 100% CWIP policy would be essentially qualitatively identical to those discussed for the 50% CWIP case in Section 4.2.3. Environmental effects would be predominantly beneficial and slightly greater in magnitude than the 50% CWIP case, but would still be undetectable nationally and small, but possibly detectable, at the regional level.

4.3.10 Socioeconomic Impacts

Socioeconomic impacts of the 100% CWIP alternative would be qualitatively the same as those described in Section 4.2.4 for the 50% CWIP case. Primary impacts would be related to increased costs of electricity in all customer classes. Under the 100% CWIP case, percent cost increases would be more than double the 50% CWIP case according to the EIA study. All negative impacts discussed in Section 4.2.4 would be aggravated by price increases of this magnitude even though average percent increases would appear relatively low. It is likely that a substantially greater number of households and businesses would experience economic hardship under a 100% CWIP policy. Although impacts would be greater for the 100% CWIP case, they probably would not be considered substantial in a regional or national context due to the relatively low percentage of FERC jurisdiction at these levels of aggregation.

4.4 SUMMARY OF OTHER STUDIES

4.4.1 Southwest Energy Associates

In a study by Southwest Energy Associates, Inc. (1982), various regulatory options were examined: (1) increasing allowed rates of return, (2) using future test years, (3) including 50% or 100% CWIP in rate base, and (4) using a trended original-cost rate base.* The study evaluated the national and regional impacts of these options for the period 1982 to 2000.

It was concluded that, without change, the trends in costs and practices of regulatory agencies would lead to utilities continuing to exhibit poor earnings and cash flow performance. The study concluded that increasing rates of return or adopting future test years offered the best prospect for raising earned rates of return, but allowing CWIP in rate base offered the best prospect for improving internal cash flow and reducing external financing needs. Although it was found that use of a trended original-cost rate base would provide financial benefits to utilities on a national basis, that option would have a negative effect on utilities in some regions.

With regard to including 50% CWIP in rate base, the immediate (1982) price increase is estimated to be 3.7% nationwide. Prices would be about 1.6% higher than the base case in 1985. CWIP-based prices would be slightly lower than base case prices in 1990 and beyond. The immediate cash flow impact would be a reduction in external financing requirements as a percentage of construction expenditures from 78.8% (base case) to 68.6% with 50% CWIP in rate base. In 1985, the cash flow would be reduced from 71.0% to 62.9%. Somewhat smaller reductions are projected for later years. The impacts on price and cash flow in the case of 100% CWIP in rate base would be approximately double those for the 50% CWIP case.

4.4.2 Argonne National Laboratory

A financial simulation model was used in the study by Argonne National Laboratory (1982) to evaluate the effects of three different policy alternatives on two electric utilities for the period 1982 to 2000. The study examined the effects of including 50% or 100% CWIP in rate base, varying allowed/earned rates of return, and tax-normalization vs. flow-through treatment of tax timing differences.

The two utilities selected for analysis differed in a number of respects. The first, Midwestern Utility, has a generating mix heavily weighted toward coal and nuclear, together constituting 75% of total capacity. The forecasted annual growth rate for the 1980s is 2.0%. The utility's current building schedule (for some large baseload plants that will increase capacity by 50% in the late 1980s) is assumed, for the analysis, to be completed on schedule and budget. In addition, capacity expansion plans were prepared for alternative demand growth scenarios of 0%, 2%, and 4% through the year 2000.

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*The effects of the tax and depreciation provisions of the Economic Recovery Tax Act of 1981 were also examined. It was concluded that although this law would improve the industry's cash flow patterns, earned rates of return would remain below allowed rates of return and might even slightly reduce earnings prospects.

The second utility, Southeastern Utility, has a generating mix that is dominated by oil- and gas-fired steam generators (65%). The electricity supply breakdown for 1980 consisted of 50% oil, 18% natural gas, and 32% nuclear and purchased power. A 2.9% long-run annual growth rate is forecasted. The utility has a modest construction program that, by 1987, will make coal and nuclear 40% of total system capacity. Natural gas use is expected to be eliminated by 1990. In the study, two demand-growth scenarios are examined: 2.9% and 1%. For each of these scenarios, capacity expansion plans were developed so that the implications of an accelerated oil-backout could be evaluated.

> The first plan, a "minimum-reserve" program, involves the building of additional plants (beyond those already under construction) only to the extent necessary to maintain a reserve margin of 18%. The second plan, an "oil backout" program, is designed to eliminate as rapidly as possible all of the oil-fired plants currently used in meeting baseload generating requirements. The backout program involves construction, starting in 1982, of 3200 MWe of coal and nuclear capacity in addition to the capacity required under the minimum-reserve plan.

The study also assumed a general inflation rate of 7% per year. Capital equipment prices and fuel prices (except oil) were assumed to grow at this rate. Oil prices were assumed to grow at 4% annually. Nominal capital cost rates of 9%, 10%, 11%, and 14% were assumed for short-term debt, long-term debt, preferred stock, and common equity, respectively.

For Midwestern Utility, facing a 2% annual growth rate, inclusion of 50% CWIP in rate base would increase rates initially (1982) by 6.7% above the base case with no CWIP in rate base. In 1990, rates would be 0.7% below the base case but would rise above base case rates by 4.6% in 2000 with new construction activity. The rate comparisons for the 100% CWIP case are about double that for the 50% CWIP case initially, but less in later years. With 50% CWIP in rate base, the Midwestern Utility would experience an initial increase in cash flow of 16.0%, a 5.2% increase in 1990, and a 17.3% increase in 2000. Similar but generally higher increases in cash flow would result from including 100% CWIP in rate base. For the high (4%) and low (0%) growth cases, the results would be substantially similar for rates and cash flows although at different levels, depending largely upon the assumed construction programs. Also, under the high-growth case, rates would be consistently higher than the base case through the year 2000.

The Southeastern Utility, because of its more moderate-sized construction program, would experience smaller changes in price and cash flow. CWIP-based rates through about 1990 under the accelerated "oil backout" program would be slightly above those for the "minimum reserve" program due to the higher level of construction activity.

4.4.3 Oglethorpe Power Corporation et al.

In a study by Oglethorpe Power Corporation et al. (1981), an evaluation was made of the inital impacts resulting from including 100% CWIP in rate base using 1979 data for 42 utilities with bond ratings of BBB/Baa or below. The methods used are similar to those of the FERC study. Like the FERC study, this study estimates the incremental effects on required revenues and cash flows when CWIP is allowed in rate base.

There are, however, some important differences between this study and the FERC study. First, the sample of utilities used in this analysis is composed of only 42 BBB/Baa or lower rated companies, whereas the FERC analysis uses 141 companies with varying bond ratings. Second, the method of computing the incremental impacts uses industry coverage estimates of embedded costs of long-term debt and preferred stock and ignores short-term debt, whereas the FERC method incorporates short-term debt and relies on individual company estimates of embedded costs. Third, the computation is based on year-end CWIP balances excluding pollution-control CWIP, whereas the FERC model uses average CWIP balances including pollution-control CWIP. Finally, rather than determining an average of individual company impacts, as is done in the FERC study, the impact computation is done for the sample of companies in aggregate.

Wholesale required revenues are estimated to increase for the aggregate of these companies by 17.4% when 100% CWIP is placed in rate base. The associated increase in cash flow derived from wholesale sales would constitute about 1.5% of total company cash flow requirements. The study did not relate this cash flow gain to any estimate of the FERC-jurisdictional portion of total company cash flow requirements as is done in the FERC study.

4.4.4 Appalachian Power Company et al.

In comments to the Commission's proposed rule change on CWIP, the Appalachian Power Company et al. (1982) submitted two studies of the effects on utilities of including 100% CWIP in rate base.

The first study ("Simulation of the Effects of Alternative Regulatory Treatment on the Financial Health of an Electric Utility") simulated the financial effects of three different scenarios on two hypothetical utilities over a 20-year period. The scenarios examined are: (1) no CWIP in rate base and attrition, (2) 100% CWIP in rate base and attrition, and (3) no CWIP in rate base, no attrition, and a higher allowed/earned rate of return. The two utilities are distinguished by their financial health. The "strong" (AA-rated) utility is assumed to earn a higher rate of return and have a higher common equity ratio than the "weak" (A-rated) utility.

Both utilities are assumed to be engaged in a construction program aimed at completing five 750-MW coal-fired plants and starting two more over the 20-year period. In addition, for both utilities and all scenarios, the following additional assumptions are made: an annual load growth of 3.1%, a load margin of 15%, and an annual construction cost increase of 9%. In addition, allowing CWIP is assumed to reduce the cost of debt and preferred by 75 basis points and increase the market-to-book ratio from 0.75 to 0.90 from the attrition/no-CWIP scenario.

According to this study, for the "strong" utility over the 20-year period, the interest coverage ratios (both including and excluding AFUDC) would drop from levels associated with a AA bond rating to those associated with a BBB bond rating when CWIP is excluded and attrition is assumed to continue. For example, interest coverage (excluding AFUDC) would drop from an average of 2.45 times in the first 5 years to an average of 1.83 times in the last 5 years of the analysis. A similar trend would occur for the ratio of internal cash flow to construction expenditures. Further, with a market-to-book ratio of 0.75 in this case analysis, the dilution of common stock would reach 49% by year 20, meaning that per share prices would have been 49% higher if new shares had not been issued during this period.

In contrast, the "strong" utility would maintain interest coverage ratios and internal cash flow ratios compatible with maintenance of a AA bond rating if 100% CWIP were included in rate base. Interest coverage would average 3.34 times over the 20-year period. Internal cash flow as a percent of construction expenditures would average 62% over the period compared to 41% without CWIP. And, dilution over the 20 years would be only 20%.

The results for the "weak" utility are comparable to those of the "strong" utility with an A rating maintained when CWIP is included and a BB rating occurring in the attrition/no-CWIP scenario.

The study did not analyze price impacts for the different cases.

The second study ("Financial Effects of Inclusion of 100% CWIP in Rate Base") estimated the initial effects of inclusion of 100% CWIP in rate base on three financial parameters for 50 electric utilities. The utilities chosen were those which, as of December 31, 1980, had at least $300 million in CWIP investment. The CWIP investment of these utilities represented 85.8% of the total investment in CWIP for all 203 Class A and B privately-owned electric utilities. The analysis of these companies was done for 1979 and 1980. The results of this study are as follows.

The before-tax interest coverage ratio (excluding AFUDC) would increase, on the average, from 1.99 to 2.93 for 1980. In 1979, it would increase from 2.06 to 2.92. The coverage ratio distribution of companies for 1980 is shown in Table 4.18.

Internal cash flow (after dividends) as a percent of construction expenditures would rise, on the average, from 29% to 44% in 1980. For 1979, it would rise from 30% to 42%. The cash flow ratio distribution of companies for 1980 is presented in Table 4.18.

External financing requirements would be reduced, on the average, by 23% in 1980 and 22% in 1979.

Table 4.18. Distribution of Interest Coverage Ratio and Cash Flow Ratio in 1980

	No. of Companies	
Parameter	Actual	CWIP in Rate Base
Interest Coverage Ratio:		
1.00 - 1.49	10	0
1.50 - 1.99	20	0
2.00 - 2.49	13	16
2.50 - 2.99	3	15
3.00 - 3.49	2	8
3.50 and above	2	11
Cash Flow Ratio:		
0 - 9%	5	0
10 - 19	12	1
20 - 29	9	11
30 - 39	8	11
40 - 49	10	11
50 - 59	5	10
60 and above	1	6

Source: Appalachian Power Company et al. (1982).

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Question II-9: Under the FERC 1983 rule, how is the burden of plant abandonment apportioned between ratepayers and shareholders when CWIP has been granted? In particular, what happens to the return already paid to the utility under CWIP if the plant is abandoned? Would the utility's new rates be designed so as to reimburse the ratepayers for the return paid previously, or would the ratepayers continue to be liable for the rate of return already paid? What is the effect of this rule on risk to ratepayers associated with abandonment.

Answer: Under the FERC's policy on plant abandonment for electric utilities, there is a sharing of the prudently incurred costs between ratepayers and shareholders. See Opinion No. 49, New England Power Co., 8 FERC ¶61,054 (1979). Ratepayers pay all costs -- including accumulated financing costs (AFUDC) -- incurred up until the time of abandonment and shareholders pay the carrying costs on all unrecouped amounts during the period that the cost of the abandoned plant is amortized in rates. Thus, the utility is allowed to earn its return on the amounts prudently invested prior to the time of abandonment.

With 50% of CWIP in rate base, the amount of carrying charges accumulated as AFUDC is less. Therefore, when a plant is abandoned, the amount to be recovered via amortization is less (since a portion of the return has already been recovered during construction). Whether the ratepayers pay more or less (from a present value perspective) is largely a function of the length of the construction period and the length of the amortization period.

Under both CWIP and AFUDC, there is no "reimbursement" to ratepayers of the return associated with investment in plants which are subsequently abandoned. The allowed return represents the costs associated with prudent investment and is recoverable whether or not CWIP is in rate base. Again, the difference is one of timing. With CWIP in rate base, the costs are recovered in earlier years and do not accumulate. Without CWIP in rate base, these costs are accumulated and recovery is deferred. Current cost recovery means higher present rates and lower future rates. Deferred recovery means lower present rates and higher future rates.

Accordingly, there is no change in the amount of risk borne by ratepayers associated with abandonment of prudently incurred investment. Indeed, since with a CWIP approach the prudence of costs is reviewed during construction rather than after the fact, a good argument could be made that a CWIP approach lessens the risk that ratepayers will have to pay for abandoned plants by advancing the time when projects are subject to regulatory scrutiny.

Question II-10a: What evidence would you recommend the Committee rely on in assessing whether application of the FERC rule will lower consumer costs?

Answer: The best evidence would be the evolving experience under the CWIP rule. In the absence of such tangible, practical evidence, the subcommittee should include analyses of the revenue effect of 50% CWIP in rate base compared to no-CWIP in rate base, such as that presented in a comparison of the related revenue flows. While year-by-year comparison is useful, the accumulated totals are important as well. The effect that the alternative treatments of CWIP will have on electric rates depends upon several factors, including the rate of return (cost of capital), the present value discount rate (customer opportunity cost), the service life of the completed construction and the Allowance For Funds Used During Construction (AFUDC) rate.

With respect to rate of return, a risk premium may be expected to be required by investors from those utilities that are not permitted CWIP in rate base, as compared to a similar utility allowed CWIP in rate base. Thus, when one compares the rate levels for the alternative treatments of CWIP, over the construction period and service life of the CWIP facility, the rate of return should be higher for the no-CWIP in rate base alternative to recognize the expected risk premium associated with this option. While the Commission's CWIP rule did not attempt to quantify this, the trial staff has used a risk premium adjustment approximating 0.25 of a percentage point to the overall cost of capital rate for comparison of 50% CWIP and no-CWIP alternatives. Note that the absence of a risk premium adjustment would tend to unduly favor the no-CWIP in rate base alternative.

The allowed rate of return should additionally be adjusted to reflect the fact that the equity component is subject to income taxes. Therefore, a composite overall return and tax factor is often used by analysts to account for this.

To compare the rate levels over the life cycle of a facility, it is also necessary to discount the future dollars back to determine present value. There are many ways to do this. For purposes of responding to these inquiries, we have selected a discount rate in accordance with the opportunity cost principle. Since it is the customers who must provide the utility's revenue requirements, it is often argued that it is the customers' opportunity cost discount rate which should be used in the present value analysis. Also, since the revenue requirements associated with plant construction are generally known with certainty and are long term, a discount rate that would be associated with a low risk, long-term cash flow stream should be used. Finally, since consumers pay utility bills with after-tax dollars, the appropriate discount rate should be on an after-tax basis. 1/

For purposes of responding to Senator Johnston's inquiry regarding a hypothetical $2 billion investment, we have employed an 8% discount rate. Generally, the higher the discount rate, the more favorable the results will be toward a no-CWIP in rate base alternative.

1/ For example, see R. R. Trout, "A Rationale for Preferring CWIP in the Rate Base," Public Utilities Fortnightly, May 10, 1979, which recommended a 5.7% discount. It should be noted that the Commission CWIP rule did not attempt to determine the appropriate discount for these purposes. The present discussion is provided for the information and convenience of the subcommitte.

The service life also influences the comparison of the 50% CWIP to the no-CWIP alternative. The shorter the service life, the more rapidly the depreciation cost of the completed construction can be recovered in customer rate levels, thus the more favorable the no-CWIP alternative looks relative to the 50% CWIP approach. Since most of the rate base for FERC jurisdictional customers is power supply related (production and/or transmission related), a meaningful comparison of 50% CWIP to the no-CWIP alternatives should employ service lives ranging from 30 to 50 years.

Finally, an appropriate AFUDC rate should be used for computing the cost of the completed construction under the no-CWIP in rate base scenario. The AFUDC rate should be predicated on the same rate of return (cost of capital) as used for the other portions of the comparison study, but it should additionally reflect the cost of short-term debt, as required by FERC Order No. 561. To account for the normalization of the interest related to the construction program, a net-of-tax AFUDC rate should be used to recognize that construction interest is tax deductible.

Without appropriate values for rate of return allowances, AFUDC rates, service lives, or discount rates, any study comparing 50% CWIP and no-CWIP alternatives will tend to misrepresent one of the alternatives as being much more favorable than the other.

Question II-10b: Please quantify this savings in a specific case, or if this is not possible, in a hypothetical case of your own choice.

Answer: Please refer to the FERC response to Senator Johnston's question regarding a hypothetical $2 billion investment.

Question II-11: J. Bertram Solomon, a witness at the hearing, presented testimony to the effect that granting CWIP always increases the cost of electricity to ratepayers. Please comment on this assertion and on the Solomon analysis. A copy of this analysis is attached.

Answer: Mr. Solomon's graphs appear to demonstrate that customers are, at a minimum, not harmed by a CWIP rate base approach. The graphs indicate that the cumulative present value of the two approaches over the service life of the plant are identical. This results from the fact that under Mr. Solomon's assumptions -- consistent with the response to Question No. II-20 -- the present value of the increased rates during the construction period is exactly offset by the present value of the reduced rates over the 30-year service life.

To illustrate the impact in nominal dollars, the following chart provides in graphic form the rate levels underlying Mr. Solomon's analysis. Rates are higher during the construction period and lower during the service life. The cross-over point in rates occurs after the seventh year, when the plant goes into service. On a present value basis, the two approaches produce identical revenue streams. Thus, over the life of the plant, customers are not harmed by the CWIP-based approach.

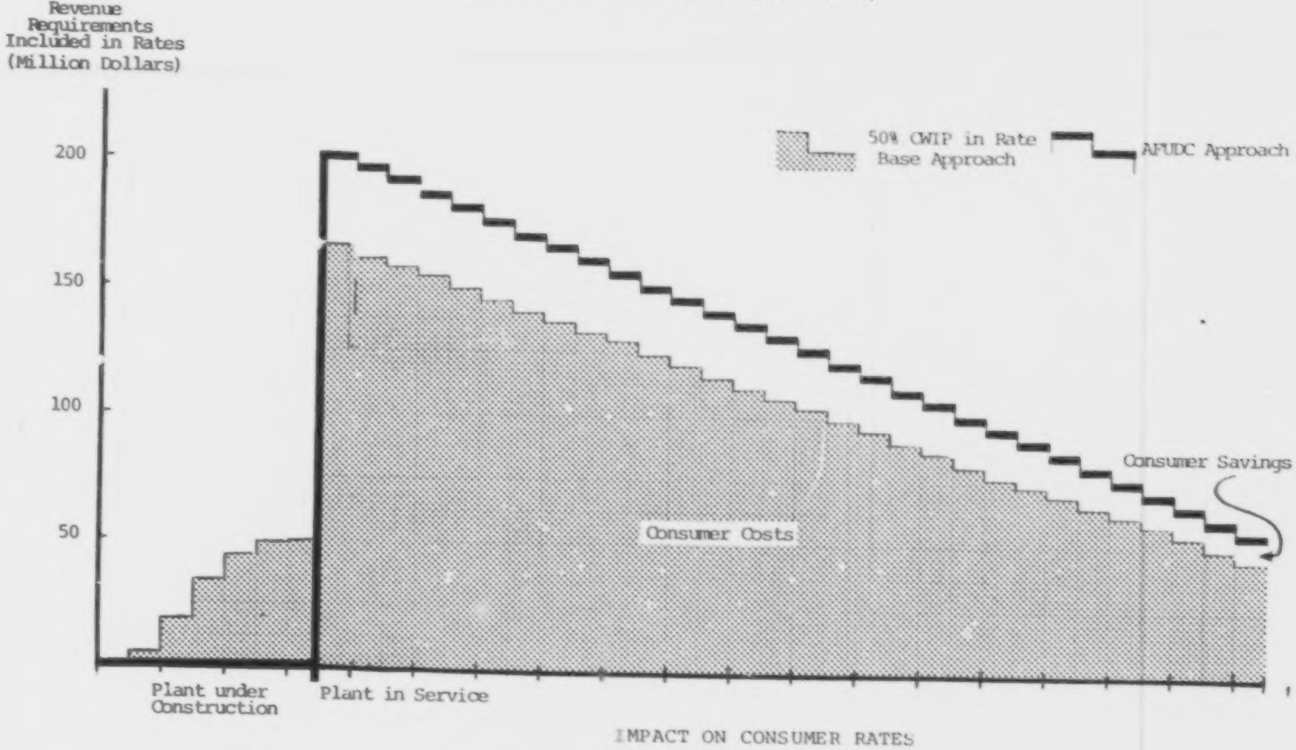
To the extent that CWIP in rate base encourages a more efficient allocation of resources and reduces the required rate of return, customers will be better off.

Finally, Mr. Solomon may also be assuming (on the final page of his statement) that construction expenditures will continue to increase. Order No. 298 recognized that if construction expenditures were to continue to grow sufficiently rapidly, CWIP-based rates may remain somewhat higher than AFUDC-based rates for the foreseeable future. Order No. 298 noted that for such results to obtain, the average annual rate of growth in construction expenditures must exceed the average allowed rate of return. The Commissior thought it unlikely that CWIP-based rates would remain indefinitely above AFUDC-based rates because of reductions in cost of capital and efficiency gains which are not reflected in the above-type analyses (the effect of a reduction in the cost of capital is reflected in the response to Question II-22.

Current indications are that construction expenditures now appear to be decreasing. According to the annual survey by the Edison Electric Institute (copy attached), construction expenditures in 1983 declined from 1982 (to $34.4 billion down from $35.4 billion) and are expected to decline to around $29 billion in 1985. The Commission also noted improved reliability as a nonquantifiable benefit that is ignored in such analyses. Finally, the nationwide figures reflect averages and do not reflect the fact that comparisons of CWIP-based rates with AFUDC-based rates will vary across companies depending on their growth rates, rates of return, and efficiency gains.

IMPACT ON UTILITY REVENUE REQUIREMENTS OF DEFERRING THE FINANCING COSTS OF A NEW PLANT

(AFUDC VERSUS 50% CWIP APPROACHES)



Source of data points: Table 2, Column (c) and Table 4, Column (i) of the Statement of J. Bertram Solomon before the Subcommittee on Energy Regulation, Senate Committee on Energy and Natural Resources, April 12,1984.

EDISON ELECTRIC INSTITUTE The association of electric companies
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Financial Info

May 9, 1984

ESTIMATED CONSTRUCTION EXPENDITURES OF THE INVESTOR-OWNED ELECTRIC UTILITY INDUSTRY

Investor-owned electric utilities anticipate spending $115.3 billion on electric utility plant and other facilities from 1984 through 1987. Included are expenditures for electric generating plant, transmission and distribution facilities, and general and miscellaneous plant. Allowance for funds used during construction (AFUDC), which is included in the total, will amount to an estimated $16.6 billion over the four year period. Gas plant and other non-electric utility plant, neither of which were included in the total, will account for an additional $6.8 billion over the same period.

The 1984 survey indicates that the industry's construction expenditures peaked in 1982 and will decline from 1984 through 1987. 1983 preliminary electric utility plant construction expenditures totalled $34.4 billion, down from $35.4 billion in 1982. This was the first annual decline in construction expenditures since 1975 and the second since 1962. Total expenditures are expected to remain essentially flat in 1983 and 1984 at $34.4 and $34.7 billion, respectively. In 1985, however, total electric utility plant construction expenditures are expected to decline sharply to $29.2 billion and continue to decline through 1987 when total expenditures are forecasted to reach $24.7 billion, approximately equal to total construction expenditures in 1978.

Electric generating plant expenditures, including expenditures for nuclear fuel, are expected to total $71.8 billion from 1984 through 1987. Preliminary expenditures in 1983 were $25.7 billion. As total electric generating plant expenditures decrease each year from $25.7 billion in 1983 to $13.5 billion in 1987, they will also decline relative to total electric utility plant expenditures. In 1983, expenditures for new generating plant accounted for 75 percent of total electric utility plant construction. By 1987, the portion of electric utility plant expenditures resulting from the construction of new generating plant will have declined to an estimated 55 percent. Over the same period, expenditures for transmission and distribution facilities, required to maintain existing service and to provide expanded service, will increase from 21 percent of total electric utility plant in 1983 to 39 percent in 1987.

Expenditures for non-nuclear generating plant will continue to increase over the course of the next three years relative to expenditures for total electric generating plant. Total nuclear generating plant, including nuclear fuel, appears to have peaked in 1983 at 71 percent of total electric generating plant expenditures. By 1987, expenditures for nuclear plant and fuel will decline to 46 percent of total plant expenditures. Expenditures for coal-fired plant alone in 1987 will account for a greater percentage of total plant expenditures (30 percent) than all non-nuclear plant in 1983 (29 percent).

As construction expenditures decline over the next four years, the industry as a whole will generate a greater percentage of its financing requirements internally. Respondents to the survey anticipated generating, on average, 58 percent of their cash construction expenditures internally during the 1984-1987 period. (Estimates ranged from 1 percent to 200 percent). Based on these estimates, it is anticipated that investor-owned electric utilities will need to raise approximately $40 billion in the financial markets during the period. Based on preliminary estimates, investor-owned utilities generated about $12 billion dollars or 42 percent of the required cash construction funds internally in 1983.

Included in the figures for total electric utility plant are capital expenditures for environmental activities, specifically clean air, clean water, and solid waste disposal facilities. In 1983, the industry's estimated expenditures for environmental activities exceeded $3.0 billion, of which approximately 66 percent was for clean air facilities, 25 percent for clean water facilities, and 9 percent for solid waste disposal facilities. The number of companies responding to this section of the survey declined in successive years owing, in part, to the uncertainty of future environmental requirements. For 1985, expenditures of at least $1.6 billion will be made for environmental facilities based on responses from companies representing 68 percent of the industry. The distribution of expenditures among the three categories of facilities will remain virtually unchanged from 1983: 68 percent for clean air facilities; 23 percent for clean water facilities; and 10 percent for solid waste disposal facilities.

The industry-wide survey from which these data were derived was conducted during the first quarter of 1984. The current forecast data reflect the impact of the cancellation and or the temporary halting of several major nuclear construction projects. Information was received from or estimated for 116 electric utility companies or systems which represented more than 97 percent of the industry's total assets in 1982. Data were expanded to represent the entire investor-owned electric utility industry. The electric utilities responding to the survey indicated that they applied, on average, a 6 percent construction cost escalation for the 1984 through 1987 period.

1984 SURVEY OF INVESTOR-OWNED ELECTRIC UTILITY INDUSTRY
ESTIMATED CONSTRUCTION EXPENDITURES
(millions of dollars)

TYPE OF FACILITY	1983(P)	1984	1985	1986	1987	Total 1984-1987
Electric Generating Plant						
Nuclear Plant	$16,883	$14,993	$9,148	$6,282	$3,916	$34,339
Nuclear Fuel Expenditures	1,282	1,435	1,904	1,790	2,307	7,436
Total Nuclear	$18,165	$16,428	$11,052	$8,072	$6,223	$41,775
Coal	$4,884	$5,297	$4,684	$4,664	$4,114	$18,759
All Other	2,688	2,679	2,538	2,897	3,176	11,290
Total Electric Generating Plant	$25,737	$24,404	$18,274	$15,633	$13,513	$71,824
Transmission and Distribution Facilities						
Transmission Facilities	$2,393	$2,826	$2,763	$2,714	$2,704	$11,007
Distribution Facilities'	4,962	5,670	6,376	6,680	6,939	$25,665
Total Transmission and Distribution Facilities	$7,355	$8,496	$9,139	$9,394	$9,643	$36,672
General and Miscellaneous Plant	1,319	1,815	1,795	1,612	1,589	$6,811
Total Electric Utility Plant Construction Expenditures (a)	$34,411	$34,715	$29,208	$26,639	$24,745	$115,307
(a) AFUDC Included	$6,672	$6,571	$4,243	$3,345	$2,420	$16,579

(P) Preliminary

NOTE: Not included in the totals above are the expenditures by combination companies for gas plant and other non electric utility plant. These expenditures are as follows:

1,090 1,333 1,487 1,468 1,456 $5,744

Question II-12a: Please provide the Committee with a discussion of State law and regulation (on a state-by-state basis) as it affects CWIP in electric utility rates.

Answer: Attached is a table from the "1982 Annual Report on Utility and Carrier Regulation," published by the National Association of Regulatory Utility Commissioners (NARUC), listing how each state reported handling CWIP during calendar year 1982. This is the latest compiled information. Data for the 1983 report has been collected by NARUC but will not be available until November 1984. It should be noted that the manner in which the state commissions report their CWIP policy is discretionary and therefore there may be more similarity in the approaches than there is in the actual responses. The 1983 data, when available, will show any reported changes but no additional detail. In order to respond to the question more specifically it would be necessary to obtain OMB clearance under the Paperwork Reduction Act to survey the states themselves.

For 1982, 33 states report a policy of including some CWIP in rate base under a variety of different standards. This number includes the District of Columbia and excludes Nebraska, which does not regulate electricity. Two states (New Hampshire and Oregon) report being prohibited by law from including CWIP in rate base. Of the 33 states reporting a CWIP policy, the standards include pollution control, projected in-service date, percent of completion, financial integrity, coverage, cash flow, and percent of valuation.

Question II-12b: Compare and contrast State regulation with the 1983 FERC rule. What are the principal differences between the approach the FERC has taken and the approach taken by the States that allow CWIP in electric utility rates?

Answer: The principal difference between state regulation and the 1983 FERC rule, based on this report, would appear to be that no state reported a generic policy, although a number of states did report allowing CWIP in rate base without indicating any qualifications. Although it is not reported, we do know that some states have a policy established by rule and others have an informal policy that can be altered as appropriate. A number of states indicate that decisions are made on a case-by-case basis. With regard to financial factors, the data does not indicate what standards are used to determine financial need. For example, decisions may be made to maintain a current financial rating, improve a rating, or be keyed to a specific rating as a floor.

Table 14 - ITEMS ALLOWED IN RATE BASE OF ELECTRIC, GAS AND TELEPHONE UTILITIES

AGENCY	The Agency Allows the Following in Rate Base -													
	Land held for future use	Property held for future use	Construction work in progress	Allowance for funds used during construction 1/	Contributions in aid of construction - Credit	Advance Payments	Research and Development	An inflation factor	Excess of cost over original cost	Materials and supplies	Allowance for working capital	Customer advances - Credit	Accumulated tax deferrals - Credit	Pollution Control Equipment
FCC 2/3/		X	X							X 68/	X	X	X	
FERC	X 4/	X 4/	5/	X		X	X			X	X		X 6/	X
ALABAMA PSC	X	X	X 18/	X						X	X			X
ALASKA PUC				X	8/	X				X	X	X	X	
ALBERTA PMC				X		9/	X			X	X 10/			
ALBERTA PUB	7/	7/		X	X		7/			X 11/	X		X	X
ARIZONA CC	X	X	X	X	X		X	X		X	X	X	X	X
ARKANSAS PSC	X 17/	X 17/	X 70/	X	X	X	X 67/		X 14/	X 71/	X	X	X	X
CALIFORNIA PUC	7/	7/	X 13/	16/	X	X	X			X	X	X	X	X
COLORADO PUC	X 17/	X 17/	7/	7/	X	X	7/			X	7/	X	X	X
CONNECTICUT DPUC			19/		X			X		X	X	X	X	X
DELAWARE PSC	X	X	X	X	X		X			X	X		X	X
D.C. PSC	X	X	X 20/	X	X					X	X	X	X	X
FLORIDA PSC	X 42/	X 42/	X 67/	X 24/	X 25/		X 26/		X 27/	X 11/	X	X	X 28/	X
GEORGIA PSC	X	X	X	X	X		X			X	X		X	X
HAWAII PUC	X 22/	X 22/		X	X					X	X	X	X	X
IDAHO PUC			X 31/	X 24/	65/	65/				X	X		65/	X
ILLINOIS CC	X 30/	X 30/	X 11/	X 32/	X 33/		X			X	X 34/	X	X	X
INDIANA PSC			35/	X			X			X	X 34/			X
IOWA SCC	X 36/		37/	X	X	X				X 11/	X	X	X	X
KANSAS SCC	7/	7/	38/	X	X	X	X			X	X			X
KENTUCKY PSC	X	X	X	X	X 33/	X	X			X	X	X 33/	X 33/	X
LOUISIANA PSC	X		X	X	X 33/	X	X			X	X	X 33/	X 33/	X
MAINE PUC	X	X		X			X		X 39/	X	X			X
MARYLAND PSC	X	X	X	X	X	X 22/	X 22/			X	X	X	X	X
MASSACHUSETTS DPU				X	X	X				X 40/	7/	X	X	X
MICHIGAN PSC	7/	X	X	X	X					X	X	X		X
MINNESOTA PUC	X 17/	X 17/	41/	41/	X					X	X	X	X 33/	X
MISSISSIPPI PSC	X			X			X			X	X		X	X
MISSOURI PSC				X	X	X	X			X	X	X	X	X
MONTANA PSC	X	X		X	X					X	X	X	X	X
NEBRASKA PSC 3/			38/				X			X	X		X	X
NEVADA PSC	43/	43/	43/	X	X	X	43/			X	X	X	43/	X
NEW HAMPSHIRE PUC	X 30/	X 30/	44/	X	X	23/	X 23/	45/	X	X	X	X	X	X 46/
NEW JERSEY BPU	X 23/	X 23/	X 23/	X 23/	X		X			X	X 23/	X	X 23/	X
NEW MEXICO PSC	X	X	47/	X	X	X	X		X	X	X			X
NEW MEXICO SCC	X	X	X	X	X					X	X			
NEW YORK PSC	X	X	X 49/	X	X		48/			X	X	X	X	X
NORTH CAROLINA UC			X 49/	X	X	X 12/				X	X	X	X	X
NORTH DAKOTA PSC	X	X		X					X	X	X			X
NOVA SCOTIA PUB	X			X						X	X			X
OHIO PUC			50/	X	X					X	X	X	X	X
OKLAHOMA CC		X 17/	51/	X	X	X 52/				X	X	X	X	
ONTARIO EB			53/	X	X					X	X	X	X21/	X
ONTARIO TSC			X	X	X					X	X			
OREGON PUC	54/	54/	54/	X	X		X			X	X	X	X 55/	X
PENNSYLVANIA PUC	X	X	X 56/	X	X		X			X	X	X	X	X
PUERTO RICO PSC										X	X			
QUEBEC EGB				X	X	X				X	X	X		
QUEBEC RSP	X 17/	X 17/					X			X	X			X
RHODE ISLAND PUC	X 10/	X 17/		X	X		X	X		X	X	X	X	X
SOUTH CAROLINA PSC	X	X	X	X	X	X				X	X	X	X	X
SOUTH DAKOTA PUC	X 17/	X 17/		X	X	X	48/			X	X	X	X	X
TENNESSEE PSC	X 17/	X 17/	X 57/	X	X				7/	X	X	X	X	
TEXAS PUC	X	X	X			X		X		X	X		X	X
TEXAS RC 58/	X	X	X 67/	X	X		X	X		X	X	X	X	
UTAH PSC	X	X	X 13/	X	X	X				X	X	X	X	X
VERMONT PSB	X	X	X 59/			X	X			X	X			X
VIRGIN ISLANDS PSC	X	X		X			X 26/			X	X			X
VIRGINIA SCC	X 29/	X 29/	X	X		X	X		X	X	X		X 28/	X
WASHINGTON UTC	X	X	60/	X 61/	X 33/			X 66/	X 62/		X		X	X
WEST VIRGINIA PSC	X	X	63/		X	X				X	X	X	X	X
WISCONSIN PSC				X	X					X		X		X
WYOMING PSC	10/	64/		X	65/					X	X	X	65/	X

Footnotes - Table 14 - Items Allowed in Rate Base

1/ AFUDC as an account balance does not appear directly in the rate base. Rate base effect takes place at that time when property to which AFUDC is related is allowed in rate base.

2/ Net book cost of plant in service, property held for future use, construction work in progress (projects with expected completion dates under one year receive rate base treatment; those with expected completion dates greater than one year receive an allowance for funds used during construction Docket 19129), plus materials and supplies actually paid for plus allowance for cash working capital. Customer advances are used as a credit to reduce the rate base; accumulated tax deferrals are used as a credit reducing the rate base.

3/ No commission regulation of electric or gas utilities.

4/ For gas utilities, to a limited extent; for electric utilities "yes" for land and "no" for property held for future use.

5/ Limited to expenditures for pollution control and for oil or natural gas fueled plants to use as other fuels, or where utility can demonstrate financial distress.

6/ Account 190 is added to rate base and Accounts 281, 282, and some of 283 are deducted from rate base.

7/ Discretionary.

8/ Deduct unamortized CIAC relating to depreciable contributed plant.

9/ Carrying cost for eligible advance payments and take or pay payments are expensed monthly rather than included in rate base. Advance payments so treated were incurred prior to NGPA Act Regulation.

10/ Includes stored gas.

11/ Included in working capital.

12/ Considered on a case-by-case basis.

13/ CWIP may be allowed to increase cash flow.

14/ Plant acquisition adjustment if beneficial to customers.

15/ Completed but not interest bearing.

16/ Capitalized upon completion.

17/ If use is imminent in the near future.

18/ CWIP allowed in rate base; AFUDC included as income. For telephone companies, the PSC follows FCC Uniform System of Accounts.

19/ Electric and gas--no, telephone--yes. CWIP allowed under certain circumstances for plant to satisfy the Safe Drinking Water Act.

20/ Limited to expenditures for pollution control for electric and telephone--follows FCC provisions.

21/ When not included in capitalization.

22/ Must meet tests of reasonableness.

23/ Based on facts and circumstances on the case in question.

24/ Only AFUDC charged on construction already closed to plant in service; depreciation on same allowed in cost of services.

25/ Follow FERC methodology.

26/ On those projects which are successfully completed and capitalized; unsuccessful projects expensed or accumulated and amortized.

27/ Prudent acquisition adjustments are sometimes permitted in rate base and amortization thereof in cost of service.

28/ Used as cost free capital in determining overall cost of capital instead.

29/ If use is imminent in the near future, usually between two and four years.

30/ Where planned use is known and it will be used in a reasonable period of time.

31/ Decided on a case-by-case basis considering in service dates and cash flow requirements among other factors.

32/ Only interest charged to construction already capitalized to plant in service; depreciation on same allowed in cost of service; book-tax timing difference flowed through to the income statement.

33/ These items are used to reduce rate base.

34/ If not offset by other cash flows.

35/ Portion has been allowed if enumerated in prehearing orders and if fixed, known and measurable in twelve months.

36/ Current policy is to allow land held for future use in rate base only if it is part of a definite short range construction plan.

37/ Construction work in progress on which AFUDC has not been capitalized has been included in rate base in some rate case proceedings.

38/ CWIP placed in service within 12 months may be included in rate base.

39/ Original cost plus prudent acquisition cost.

40/ Less appliances, 13 month average.

41/ Telephone: short-term telephone plant under construction included in rate base. Gas and electric: To extent CWIP is included in rate base there is an AFUDC offset to operating income except in unusual circumstances.

42/ Allowed in reasonable amounts recognizing the high appreciation of land values throughout the State and as long as there is evidence that facilities will ultimately be constructed on the site.

43/ Conditional.

44/ Law passed by legislature in 1979 excluding CWIP in determination of rates.

45/ Inflation factor allowed on occasion by addition of attrition percentage to the allowed rate of return. Step increases allowed later for certain known expenses.

46/ When required or needed by State or Federal agency.

47/ Allowed only if interest has not been capitalized.

48/ General research and development allowed as an operating expense; research and development performed in connection with a specific project would become part of rate base if such project ultimately became part of plant in service.

Footnotes - Table 14 - Items Allowed in Rate Base (Continued)

49/ Effective July 1, 1979. Revised June 17, 1982.

50/ Includable in rate base at discretion of commission if 75% complete on date certain and allowance for CWIP does not exceed 20% of total valuation, exclusive of CWIP allowance.

51/ Case-by-case basis with certain restrictions--1975 ruling.

52/ For insurance, etc., but excludes advances for exploration and drilling for new sources of supply for natural gas.

53/ Construction work in progress normally disallowed; if included, AFUDC on such assets is included in utility income.

54/ In 1978 an initiative was adopted prohibting rate base inclusion of assets not "presently" in service.

55/ When not included as interest and dividend free capital.

56/ Primarily non-revenue producing.

57/ If interest charged to construction is included in income.

58/ No commission regulation of electric or telephone utilities.

59/ Included if construction is imminent.

60/ In extraordinary circumstances with AFUDC included as operating income as appropriate.

61/ As appropriate.

62/ Only if commensurate benefit to the ratepayer is shown.

63/ Included only in cases where coverage or cash flow problems are determined to be present.

64/ May be allowed if in service at time of order issuance.

65/ Deduct from rate base.

66/ Allowed on occasion based on specific attrition study.

67/ Requires a showing by clear and convincing evidence that the inclusion is necessary to maintain the financial integrity of the utility.

68/ Materials and Supplies less amounts held for future construction and Class "C" stock (out of service - awaiting repairs).

69/ Allowed only if interest has not been capitalized or to maintain financial integrity.

70/ If construction is to be completed within one year of the test year.

71/ Reduced by the amount of materials and supplies used in CWIP during the test year.

Question II-12c: What evidence is there that differences between FERC treatment of CWIP and State treatment are leading, or could lead, to a "price squeeze" on certain utilities?

Answer: With regard to the question of whether or not Commission policy could lead to a "price squeeze" on certain utilities, see the attached excerpt from the 1983 rule. No information or experience to date would indicate a need to alter this position. Allegations of price squeeze have been made in several cases. Each of these has been suspended and set for trial. The first of these cases is expected to go to trial in the summer of 1984.

The Commission has considered the potential for price squeeze from this rule. No substantive evidence establishing the occurrence or likely occurrence of a price squeeze was submitted in this record. The Commission's own analysis confirms that the final rule does not generally create price discrimination where it does not otherwise exist, although, as the percentage of CWIP in rate base increases, the likelihood of some price discrimination also appears to increase. 96/ Accordingly, with respect to the arguments of wholesale customers, the Commission finds no indication that undue price discrimination or other anticompetitive effects will occur necessarily as a result of implementing the final rule.

Price squeeze or undue discrimination issues may be examined as they might arise in particular cases. The Commission, of course, retains flexibility to deny inclusion of CWIP in rate base or to modify rate treatment of other cost-of-service items as a means of remedying a problem after a finding of undue discrimination. But we do not believe that the rule must operate to automatically deny CWIP simply because a price squeeze is found to exist. If such action is appropriate, it will be based on determinations made on a case-specific basis. 97/

96/ *See* Environmental Assessment, *supra*, at § 4.2.5.

97/ This is consistent with our stated policy not to remedy a price squeeze if it is due solely to state regulatory action or inaction. *See* Opinion No. 157, Pennsylvania Power Co., Docket No. ER77-277-002, *et al.*, 21 FERC ¶ 61,313 (December 21, 1982).

Question II-13: What analysis has been done of the impact of the 1983 FERC rule on the competitive balance among various types of utilities? Testimony of the American Public Power Association at the hearing identifies adverse competitive impact on more than 900 local publicly-owned utilities as a major defect in the 1983 FERC rule. Please comment.

Answer: In the Environmental Assessment prepared on the final CWIP rule, an analysis was made of the likelihood that the rule would create price discrimination situations between wholesale customers and their suppliers in competitive retail markets. That study found that the CWIP rule did not create price discrimination in any cases where it did not already exist, although the likelihood of its occurrence appeared to increase as the percentage of CWIP allowed in rate base increased. Based on this study and general lack of substantive evidence submitted by commenters in the proceeding, the Commission found no basis for believing that undue price discrimination or other anti-competitive effects will necessarily occur as a result of the rule's implementation. The Commission stated that these issues may be examined on a case-by-case basis. The relevant portions of the CWIP rule discussing this point are attached as part of the response to Question No. II-12.

The testimony of the American Public Power Association, like the comments submitted in the Commission's rulemaking proceeding, provides no empirical support for the adverse competitive impacts. The testimony cites the rate increases that have already been obtained under the rule yet cites none as a potential discriminatory or otherwise anti-competitive situation. The testimony implies that the rule is fostering corporate reorganizations yet cites no actual instances.

The testimony suggests that the FERC's ratemaking policies, especially the CWIP policy, are more favorable to companies and their stockholders than the policies of state commissions. While this may be true when the FERC is compared with some states, it is not true with regard to others. There are a multitude of ratemaking policies that the FERC and any one state may differ on. The balance struck by the Commission between shareholders and ratepayers may be expected to differ from that struck by particular state commissions as the state commissions differ among themselves. It is because of these differences that the FERC has generally taken the stand that anti-competitive claims should be handled on a case-by-case basis.

The APPA testimony also raises the concern that the Commission has set an onerous standard for customers to meet in justifying not being charged CWIP-related costs because they do not need all of the power when the plant is complete, the so-called "double whammy" issue. The 1983 CWIP rule stated that customers would have to show that they will not receive power when the plant is in service and that they were not considered in the wholesale supplier's decision to build the plant. APPA believes the latter stand is onerous. This is one of the issues being argued on appeal as indicated by the response to Question No. II-23. Accordingly, no further comment will be made on this point.

Question II-14a: Inclusion of CWIP in an electric utility's rate base on a caseby-case basis could lead to much more timely review by FERC of the prudence of construction expenditures. Explain, using specific examples, if possible, how this would happen under the FERC rule.

Answer: The rule requires in virtually every CWIP application review of the prudence of construction costs related to total projects as the costs are incurred and concurrently claimed in rate base. For those projects already well along in construction and possibly near completion, Order No. 298 procedures will not bring about review much earlier than would have been the case prior to Order No. 298. However, with regard to relatively new projects, Order No. 298 will mean that they will be scrutinized earlier in their construction cycles.

Order No. 298 examinations currently concern the prudency of construction programs including: lead times, construction contracts and amendments, monthly expenditures, financial commitments, system load projections and assumptions, reserve and reliability margins, alternative sources, pool membership requirements, state approvals, direct costs, fuel mix, and other considerations.

Question II-14b: Contrast this FERC rate treatment with the situation that prevailed prior to adoption of the 1983 rule.

Answer: Prior to Order No. 298, the Commission had the opportunity to examine the prudence of construction project costs either when the projects were concurrently claimed in rate base in the case of Order No. 555 pollution control or fuel conversion CWIP facilities, or later when whole plants were abandoned or completed. In five cases that went to trial prior to Order No. 298, staff and intervenors had examined the prudence of $189.8 million of after-the-fact construction project expenditures. Of this amount, $100 million was related to completed construction, with the remainder attributable to abandoned plants.

Question II-14c: Testimony of the American Public Power Association (p. 6) contends that the FERC rule provides "blanket relief through virtually automatic allowance of CWIP." Please comment.

Answer: Order No. 298 makes public utilities eligible to file to include up to 50 percent of CWIP in rate base subject to certain limitations. To obtain CWIP in rate base, a public utility must file an application with the Commission and provide the documentation prescribed in 18 C.F.R. §35.13. The utility's CWIP-related rate charge application is then subject to the same ratemaking proceedings and scrutiny, including additional discovery in litigation by staff and any intervenors, as any other element of the cost of service. The rule does not therefore automatically place CWIP in the rate base of any particular utility; this may only be done pursuant to a full rate proceeding under the Federal Power Act.

Question II-15: Please describe, using specific examples if possible, how the rule operates to provide for the systematic assessment of least cost alternatives to conventional powerplant construction. What rights do intervenors have to contest a utility's analysis of alternatives? To what extent does the FERC staff challenge this analysis?

Answer: The FERC rule initiates the process of assessing the least cost alternatives to conventional powerplant construction by requiring a utility filing for an increase based in part on CWIP to submit information on its plans with its filing. Such information is to include an assessment of the relative costs of adopting alternative strategies including an analysis of cogeneration, small power production facilities, load management, conservation efforts, additions to transmission plant or increased purchases of power, and an explanation of why the program adopted is prudent and consistent with a least-cost energy supply program.

Intervenors have the same rights to contest a utility's analysis of alternatives as any other party in a proceeding before FERC including the right to make data requests, take depositions, cross-examine witnesses, present testimony and exhibits, file briefs and to challenge Commission opinions in the courts.

The extent to which staff will challenge a utility's analysis of alternatives will be made on a case-by-case basis after a thorough review of the utility's information as filed, the utility's response to data requests, and issues raised by intervenors.

Question II-16: H.R. 555 provides for inclusion of CWIP in a utility's rate base if certain showings are made. Please provide the Committee with a "walk through" of the application of a utility for inclusion of CWIP in its rate base under H.R. 555. Use a specific application if possible. Compare this process with the process under the 1983 rule. For example, what are the differences with respect to evidence? Intervention? Other administrative procedures? Time to resolve the case?

What is the significance of the figure of 40 percent in H.R. 555 (internally generated funds/construction expenditures)? Does the choice of this figure appear to be based on accepted methods of assessing the financial health of an electric utility? Explain.

Answer: Under Order No. 298, a utility may file to include up to half of its CWIP in rate base, subject to the limitation that any CWIP increase for each of the first two years of the rule cannot exceed six percent of the utility's wholesale revenues under the rates to be superseded. Additionally, the rule amended the rate increase filing requirements. To assist the Commission in evaluating the reasonableness of construction costs, including the utility's use of least-cost alternatives to construction, utilities seeking CWIP are required to submit additional information about their construction programs. Order No. 298, FERC Stats. & Regs. ¶ 30,455 at 30,515-30,517 (1983). Assuming the utility meets these threshold requirements, the Commission may suspend the rate for a period up to five months and set the case for hearing. The rates go into effect, thereafter, subject to refund. During the hearing process, intervenors and Commission staff have an opportunity to raise questions about the utility's construction program, through discovery, evidentiary submission and cross-examination of the company's presentation. In accordance with Commission precedent, there is a presumption of management regularity. Thus, in the first instance the burden of creating a serious doubt as to the prudence of management decisions lies with parties contesting these decisions. The presumption of management prudence is rebuttable, based on a showing that there is a serious doubt. In this vein, the Commission expects that the:

> rule adopted will fundamentally reorient the Commission's assessment of the reasonableness of construction programs. It affords in effect an opportunity to review and judge the prudence of costs as those costs are incurred and claimed in rate base, rather than at a later point in time when a project is completed or abandoned and a potentially unwise investment has already been made.

Id. at 30,515.

As to the amount of time it would take to litigate CWIP cases under Order No. 298, there is insufficient experience to be able to determine this with certainty. However, the experience so far does not indicate a substantial increase in time needed to process and litigate these cases.

Under H.R. 555, a utility filing for CWIP would have to meet the threshold test of having internally-generated funds from wholesale rates be 40 percent or less of plant construction expenditures (for wholesale service) during the test period. Section 213(c). Additionally, the application would have to (1) include a showing of the utility's financial condition and, if the utility claims it is in "severe financial difficulty" (as the Commission defines the term by rule), so certify; (2) describe wholesale construction expenditures and sources of funds to sponsor construction during the test period; and (3) explain the need for the proposed plant, including an assessment of alternative means of avoiding the construction by the use of such methods as load management techniques and cogeneration. Section 213(d). Once the 40 percent threshold and the application requirements are met, the Commission is required to set the request for hearing in the same manner as the other rate requests, with the burden of proof being on the proponent. Section 213(e). If the utility certifies it is in "severe financial distress," the Commission is required to hold a preliminary adjudicatory hearing, after which the Commission may conclude that CWIP should be allowed in rate base, subject to refund upon final Commission order. Section 213(f). This preliminary determination is subject to three provisos: (1) the increase must not exceed amounts necessary to restore internal fund generation to a level of 40 percent of construction; (2) there is a 6% revenue increase cap over previous rates for the first two years; and (3) no increase in rates is allowed prior to the Commission order. Section 213(e) & (h)(1, 4, 6). It is unclear from the wording whether the last of these provisos implies that rates would not be allowed to be collected subject to refund prior to a final Commission determination. If this is the intention, then this subsection is inconsistent with Section 213(e) which implies a refund requirement.

If "severe financial distress" is not claimed, CWIP may be generally included in rate base if construction is deemed necessary and if the utility would be prevented from financing such plant except at a much higher than average cost for new long-term debt within the electric utility industry. These factors would, of course, be the subject of extensive evidentiary presentations by the company and intervenors. Section 213(g). In addition to the CWIP cost limitations forming part of the preliminary adjudication of financial distress of a utility, Section 213(e), H.R. 555 would limit CWIP in the event of imprudent investment, if the increase would create a price squeeze and if the customer can prove that it will not use the plant being constructed. These issues would also be the subject of evidentiary hearings.

The significance of the figure of 40 percent of internally-generated funds used in H.R. 555 was chosen by the drafters of H.R. 555. There is no explanation in the bill of why the figure was chosen. For your reference, however, the following table indicates the average ratio of internally-generated funds to construction expenditures for the years 1973 to 1982:

	Percent
1973	35.2
1974	31.7
1975	45.8
1976	52.2
1977	46.7
1978	43.4
1979	41.4
1980	39.3
1981	42.7
1982	50.9
1983	not yet available

Source: Standard and Poor's Compustat Services

Question II-17: It is contended (Rep. Ottinger's statement, pp. 6-7) that the FERC rule provides an opportunity for utilities to "circumvent state regulation which presently sharply limits the inclusion of CWIP in retail rate bases". Please comment.

The Commission's rule affects rates that constitute only about 10 percent of electric power sales nationally. Mr. Ottinger's contention that the Commission is seeking to create a ratemaking practice inimical to the policies of state commissions does not square with the actual views of many state regulatory agencies, courts, and legislatures. According to a 1983 analysis by the Edison Electric Institute, over one-half of the states (27) allow full or partial CWIP in rate base on a regular basis. Another 12 states have allowed CWIP in rate base on some occasions. The 1983 CWIP rule may not precisely resemble the policies adopted in these states and may conflict with the approach of the 11 states that prohibit CWIP in rate base. The inclusion of CWIP in rate base is, nonetheless, a widely accepted regulatory policy.

Question II-18a: Chairman O'Connor's testimony states (pp. 6-7) that, "The deterioration in investment quality of utility bonds necessarily meant that utilities would have to pay higher interest rates to attract capital in competition with other investment opportunities. As investment in utility stocks and bonds became less secure, utilities had to pay a premium to attract new sources of capital." Please provide appropriate data from the Commission's files to document both statements.

Answer: The declining quality of electric utility bonds is indicated in the following table. These data demonstrate the significant rise in the number of utilities classified in the lower categories -- that is, below A/A. Bonds rated below Baa/BBB are recognized as "not of investment quality." Markets for such bonds are limited as many institutional investors are prohibited by law from purchasing them.

Electric Utility Companies

Bond Rating Category (Year-End) */

	1984	1983	1982	1981	1980	1979	1975
Aaa/AAA	3	3	3	3	3	3	3
Aaa/AA	0	0	0	0	1	1	2
Aa/AA	31	33	29	26	30	32	35
Aa/A or A/AA	5	5	7	10	9	9	14
A/A	29	29	31	36	35	41	37
Baa/A or A/BBB	6	7	10	11	11	10	10
Baa/BBB	30	29	32	28	25	19	17
Below Baa/BBB	11	11	5	4	4	3	1

Source: Salomon Brothers, Inc., Electric Utility Quality Measurements - Quarterly Review (4/2/84).

Note: The letters to the left of the "/" are the Standard and Poor's bond rating. The letters to the right are the Moody's bond rating.

*/ 1984 data as of 3/28/84.

The differences in interest rate yields on bonds of various ratings are demonstrated as follows:

Moody's Average Bond Yields (%)

Moody's Rating	Aaa	Aa	A	Baa
1979	9.86	10.22	10.49	10.96
1980	12.30	13.00	13.34	13.95
1981	14.64	15.30	15.95	16.60
1982	14.22	14.79	15.86	16.45
March 1984	-----	13.66	13.87	14.56

Source: Moody's Bond Survey (various issues).

The potential need for a premium is also illustrated, for example, in Commission's staff testimony in a rate case filed in 1982, where staff recommended a higher rate of return if CWIP were not allowed. See testimony attached. The case in which this testimony was filed is pending and so no opinion is expressed as to whether the position advocated by staff is soundly based given the facts of that specific case. It is cited as illustrative, however. Current developments with several New England utilities further underline the statement.

Question II-18b: What is your best estimate of the interest rate penalty paid by a utility in securing financing if it is not allowed CWIP? That is, what interest rate could a utility expect to pay for a given project if it is financed with AFUDC as compared to the interest rate for the same utility for the same project if CWIP were allowed?

Answer: The interest rate penalty incurred by a utility in securing debt financing if it is not allowed CWIP in rate base is difficult to measure and forecast precisely. One study by Eugene F. Brigham of the University of Florida-Gainesville Public Utility Research Center, entitled "The Treatment of CWIP" (October 1981), studied the impact of CWIP policy on coverage ratios, the key determinant of bond ratings. He concluded that a company which was allowed to include 100% CWIP in rate base would have a bond rating at least two notches above that of an otherwise similar company which was required to exclude CWIP from rate base. This penalty would be .90 percentage points based upon March 1984 average bond yields. These yield differences would be reflected in all of a utility's outstanding long-term debt, not just the new debt secured to finance a new plant. While we do not necessarily endorse Mr. Brigham's study, it does represent one attempt to quantify the interest rate penalty.

Montaup Electric Company)
Docket Nos. ER81-749
& ER82-325

Testimony of
Raymond R. Cassidy
Witness for the Staff of the
Federal Energy Regulatory Commission

Q. Please state your name and address.

A. My name is Raymond R. Cassidy. My business address is 400 First Street N.W., Washington, D.C.

Q. What is your position with the Federal Energy Regulatory Commission (FERC)?

A. I am employed as a Financial Analyst in the Office of Electric Power Regulation, Division of Electric Rate Regulation.

Q. Please state your qualifications and experience.

A. I have a Bachelor of Arts degree in Mathematics from the College of Wooster and a Master of Business Administration degree from the University of Pittsburgh. Since joining the former Federal Power Commission in 1971, I have taken additional accounting courses at George Washington University and finance courses at George Mason University. I am a Chartered Financial Analyst. I am a member of the National Society of Rate of Return Analysts, the Washington Society of Investment Analysts and the Financial Analysts Federation.

My first assignment with the Commission was with the Office of Accounting and Finance, Division of Audits, where I worked for four years. While there, I worked on special projects dealing with intra-company and inter-company analyses of public utilities. Those projects were used to define areas of concentration for the Commission Staff in its conduct of compliance audits.

I transferred to the Division of Finance and Statistics in August, 1975 and assumed the duties of a Financial Analyst. My responsibilities included reviewing the financial statements contained in rate increase applications of public utilities to verify that they conform to the Commission's regulations. I also testified to the rate of return that should be incorporated in the computation of utilities' jurisdictional revenue requirements in evidentiary proceedings before the Commission.

In December 1976, I was assigned to the Office of Electric Power Regulation, Division of Electric Rate Regulation. My responsibilities in my present position remain unchanged from what they were in the Division of Finance and Statistics.

Q. In what cases have you testified in hearings before the Commission or served written direct testimony?

A. I have testified in:

included in rate base?

Q. If MEC's requested amount of CWIP were included in rate base, what would be the investors' required return from an investment in EUA's common stock?

A. If CWIP is included in rate base, the risks of EUA would be lowered. In my opinion, investors would require a return which is within the range for the comparable companies. A return of 16.5% should be sufficient to allow EUA to attract common equity financing if CWIP is included in rate base.

Q. Is the investors' required rate of return for common equity also the appropriate rate of return on book value that should be granted in this case?

A. No, it is not. If EUA earned a return equal to the investors' requirement, EUA's expected market price would equal the book value per share. If EUA would then sell new common stock, the proceeds per share to EUA would be less than book value by the amount of the flotation cost per share, which is deducted from the selling price. The common shareholders would then suffer dilution of the book value of their investment.

Q. How do you propose to develop the return on book value that will satisfy the investors' requirement for return on common equity and avoid the dilution of EUA's book value per share?

A. The allowed return on common equity in this case should allow investors to receive their required return and also allow EUA to recover its flotation costs of new common equity. I will compute an incremental adjustment to the investors' required return which will allow the Company to recover its flotation costs of new common equity. The adjustment is a function of the Company's flotation costs (F) and the amount of new equity to be issued. The adjustment is computed using equation (6) in Appendix B to my testimony.

Q. What values for F and s do you propose to use for EUA in this case?

A. EUA has issued common stock publicly five times since 1977. The average flotation cost for these issues was 5.06% as shown on Schedule No. 38. I mentioned earlier that EUA's new stock sales are expected to increase its common equity by 7.2% annually. Therefore, $F = .0506$ and $s = .072$.

Equation (6) in Appendix B can now be solved as follows:

$$k = Fs/(1+s)$$

$$k = (.0506 \times .072)/1.072$$

$$k = .0034$$

I will round the estimate of "k" to .3% in order than an undue degree of precision is not implied.

The cost of common equity for EUA is the sum of the investors' required return and the flotation adjustment. The cost of common equity will be 17.9% if CWIP is not included in rate base and 16.8% if it is included.

Q. You have shown that EUA's cost of common equity capital and, therefore, its required return on book value is equal to the investor's required return plus an increment which allows the Company to recover its flotation costs of common stock issuances. Some analysts also make an allowance for market pressure. Why have you not adjusted the allowed return on book value to compensate for market pressure?

A. While it may be true that companies who issue new common stock infrequently may suffer some downward pressure on their stock price as a result of a new common stock issue, I do not believe that this is true for electric utilities. In my opinion, investors are aware that utility companies require new common stock issues on a regular and predictable basis. Therefore, investors consider the effects of these new issues in making their determination of the price they are willing to pay for a utility company's stock. For this reason the effect of new common stock issues, if any, are already reflected in the required return established by my DCF analysis.

Investors are certainly aware that the Company has a continuing requirement for new common equity financing. To my knowledge, the efficient capital market theory has not been disproved. Information is considered by investors at the time it becomes known. The market is aware of EUA's financing requirements. No reasonable person can assert that investors would ignore EUA's future financing requirements in making their current pricing decisions and then rush to bid the stock price down when EUA brings a new common equity issue to the market.

Since EUA's cost of equity is a function of the amounts of new common equity financing, any allowance for alleged market pressure above the market-determined cost of equity would be redundant.

Q. Have you performed a study of price movements associated with new issues of electric utility common stock?

A. Yes. I have included it as Exhibit No.______(RRC-2). In this study, the observed stock price movements between the announcement and offering dates of each issue were adjusted for for general market movements to isolate the effect of the new issue. The results show that, in 1976, 1977 and 1979, for approximately half of the issues, the price fell and for the other half, the price rose. The mean percentage price effect of the issues was not significantly different from zero. In 1978, there were more price declines than price increases. This can be explained by the fact that utilities in general did not participate in the speculative market rallies in April and August of 1978. Investors are aware that dramatic capital gains cannot be realized from investments in electric utility common stock which are considered as income investments with the potential for moderate capital gains.

The results shown in Exhibit No._______(RRC-2) do not indicate that there is any systematic and foreseeable downward price effect of new electric utility stock issues. This supports my conclusion that no allowance for market pressure should be made in determining the cost of common equity capital of an electric utility.

Q. Is it true that a return on common equity of 17.9% if CWIP is not included in MEC's rate base or 16.8% if CWIP is included would fully compensate EUA for its cost of common equity financing?

A. Yes, that is true.

Q. The Company claims that it is suffering from severe financial distress. The former Federal Power Commission, in Order No. 555, stated that it would consider the inclusion of CWIP in rate base if it were necessary to provide relief to a utility in severe financial distress. However, Order No. 555 did not provide provide any insight into what constitutes a condition of severe financial distress. Will you state your own definition of a condition of severe financial distress?

A. I would define severe financial distress as the inability to meet one's cash obligations when they are due.

Q. How could an electric utility fall into a situation of severe financial distress, as you have defined it, if its earnings are adequate as measured by the return on common equity.

A. This could happen if a large portion of a utility's total assets consisted of CWIP which is not included in its rate base. For instance, if a utility's rate base not including CWIP represented 50% of its assets and CWIP represented 50% of its assets the Company would be placed in the position of having to pay 100% of its interest on long-term and short-term debt and preferred and common dividends in cash while only 50% of its assets were earning a cash return. It is obvious in this situation that the cash return on rate base could not be sufficient to allow the utility to pay its capital service costs entirely from its cash return on rate base.

Fortunately, for utilities with large CWIP balances, other items such as depreciation, tax deferrals and investment tax credits generate cash and help to generate a total cash flow which is larger than the cash provided by the return on rate base. A condition of severe financial distress will not exist as long as the utility's total cash generation is sufficient to meet its cash obligations in a timely manner.

Q. Have you performed any tests to assure that your recommendation of a return on equity of 17.9% will prevent a condition of financial distress if no CWIP is included in the rate base?

A. Yes, I have. The problem that the Company is facing is one of cash flow and not earnings. The Company's earnings, as measured by the return on equity, did not indicate a problem in 1981. MEC has a huge amount of capital invested in CWIP, which does not earn a cash return under current FERC FERC ratemaking policy, but the capital service costs on the funds used to finance this construction work must be paid in cash. Therefore, I have examined the cash flow, on a test year basis, that MEC would realize if my recommendation were adopted. Schedule No. 39 shows that MEC would generate enough cash to pay its cash obligations and have more than $3.75 million of internally generated funds remaining for construction expenditures. Exhibits filed with supplemental direct testimony sponsored by Mr. Pardus show that MEC's construction expenditures during 1982 are expected to be $44.4 million. The ratio of internal funds generation to construction expenditures would be 8.2%. While the data on Schedule No. 39 indicate that MEC would generate sufficient cash to pay its capital service obligations if the allowed return is actually earned, the margin of safety for meeting these payments with internal cash is rather thin.

Q. What are the implications of a negative realized internal cash flow by MEC?

A. MEC would be placed in the position of having to borrow additional short-term funds to pay its capital service obligations to Edison or defaulting on a portion of these payments. A default on a portion of the interest or dividends payable to Edison would result in a decline of Edison's interest coverage. This would weaken Edison's ability to obtain additional financing in the capital markets which is needed by Montaup to complete its constructin program.

Q. If the margin of safety for meeting capital service costs is rather thin, why have you not recommended a higher return on equity if the Commission does not allow the inclusion of CWIP in the rate base?

A. A return on equity of 17.9% is the highest return that can be justified by my estimation of the cost of common equity to EUA. However, knowledgeable investors know that MEC has been allowed to include CWIP in the rate base for rates currently being collected subject to refund by FERC. This indicates that the Commission is considering the inclusion of CWIP in MEC's rate base. If investors believed that there were no possibility of MEC being allowed to include CWIP in rate base, it is possible that MEC's cost of common equity would be higher than 17.9%.

Q. In view of this, do you consider the Company's request for an allowed return on equity of 18.25% if no CWIP is included in rate base to be unreasonably high?

A. No, I do not.

Q. What is your recommendation for the allowed return on equity if CWIP is included in the rate base?

A. If investors were certain that the 16% of MEC's CWIP would be allowed in the rate base, as requested by the Company, I believe their required return would be 16.5%. The addition of 0.3% to allow EUA to recover its flotation costs of new common stock would produce a cost of common equity of 16.8%. Therefore, I recommend that MEC be allowed to earn 16.8% on its common equity if CWIP is included in its rate base in this case.

Q. Have you performed a cash flow analysis showing the estimated effect of a return on equity of 16.8% and the inclusion of CWIP in the rate base?

A. Yes, I have. The results are shown on Schedule No. 40. The inclusion of CWIP in the rate base and an earned return on equity of 16.8% produce internal cash generation equal to 14.6% of construction expenditures during the test year. This is an improvement over the internal cash generation produced by the non-CWIP based rates. Additionally, in my opinion, the internal cash generation provides an adequate margin of safety for the payment of MEC's capital service obligations to Edison.

Q. The Company states that it must generate internal cash which is sufficient to pay 40% of its construction expenditures. Do you believe that this is essential to the financial integrity of the Company?

A. No, I do not. In 1981, the average ratio of internal funds to construction expenditures for the 100 utilities was 41.79%. The median ratio was 38%. While I believe that the Company's ability to finance a portion of its construction expenditures internally is essential to its financial integrity, the fact that half of the electric utility industry generated less than 38% of construction expenditures internally in 1981 does not indicate that internal funding of 40% of construction expenditures is generated less than 15% of their construction expenditures is necessary to avoid a financial crisis. Indeed, 21 of the 100 utilities generated less than 15% of their construction expenditures internally in 1981.

Q. If the Company is allowed to include the requested 16% of its CWIP in its rate base, the annual rates paid during the construction period by consumers will be $3.2 million higher than the rates paid if no CWIP is included despite the lower allowed return on equity. Will any future benefits be realized by the Company's ratepayers if CWIP is included in the rate base?

A. Yes. If CWIP is included in ratebase in this case, a large amount of AFUDC accruals on the CWIP included will be avoided. This will result in a lower original cost of the Seabrook plant when it is placed in service. This, in turn, will produce lower depreciation allowances and lower return dollars paid by the ratepayers.

The Company has already provided data showing that the total rates paid from 1982 through the entire service life of the Seabrook plant will be lower if CWIP is included in the ratebase in this case. I believe that it may be more meaningful to determine in what year of the plant's service life that the present value of the aggregate rates paid by consumers will be equal for the CWIP-based rates and the non-CWIP-based rates. I have used the following assumptions in this analysis:

(1) average AFUDC rates of 14.0% compounded semi-annually for the remainder of the construction period;

(2) 35 year service life;

(3) pre-tax rate of return on rate base of 21% after the plant is placed in service.

The variables in this analysis are rate base, depreciation, return dollars and taxes. The pre-tax rate of return is the rate of return which will compensate the Company for its cost of capital and the taxes to be paid. I have assumed that the Company's cost of capital will be the same after the Seabrook plant is placed in service as it is currently if CWIP is included in ratebase. The pre-tax rate of return is computed on Schedule No. 41.

I have performed this analysis twice, assuming two in-service dates for the first Seabrook plant. They are January, 1984 and January, 1985. The results are summarized in the table below. The workpapers for the analysis are in Exhibit No.______(RRC-3). The amounts shown under rate base reduction are the amount of AFUDC accurals which will be avoided by including CWIP in rate base in his case. The years shown under break-even date are the years in which the present values for the CWIP ased rates and non-CWIP-based rates will be equal. The difference between the break-even date and the date that the plant is taken out of service represents the number of years that the aggregate savings to ratepayers of placing CWIP in rate base in this case will increase.

In-Service Date	Rate Base Reduction	Discount Rate	Break-Even Date
Jan., 1984	$5,871,869	5%	1989
		10%	1991
		15%	1996
Jan., 1985	$9,460,299	5%	1990
		10%	1992
		15%	1998

Even if the discount rate is 15%, the present value of the aggregate rates paid by consumers will be lower if CWIP is included in rate base than if it is not before half of the service life of the plant has expired. Since most electric ratepayers pay electric bills with after-tax income, the inclusion of CWIP in rate base would be to their economic advantage even if they had investment opportunities available to them which would yield an after-tax return of 15%.

Q. The Company alleges that, since the amount of CWIP to be included in the rate base is a small portion of its total CWIP, the reduction to the return on equity should also be small, namely 25 basis points. You have recommended a reduction to the allowed return on equity of 110 basis points if CWIP is included in the rate base. Why is your reduction of the recommended allowed return so much larger than the Company's?

A. In my opinion, the inclusion of any amount of CWIP in the rate base will enhance the attractiveness of EUA's stock. We should recognize that FERC's inclusion of CWIP in rate base for the first time in a formal opinion would represent a substantial improvement in regulatory policy from the investors' point of view. A differential of 25 basis points in the investors' required return is not much of an indication of a difference in risk perception by the market.

Q. Is there any other reason why you believe that a reduction of only 25 basis points in the allowed return on equity is inappropriate if CWIP is included in the rate base?

A. Yes, there is. If the allowed return on equity is to be reduced by only 25 basis points, the annual cost to the ratepayers will be almost $4 million higher if CWIP is included than if it is not. The differential between the two annual costs is accounted for by the differential of the products of the rate base and the pre-tax returns paid by the ratepayers. The computation of the $4 million cost differential is shown on Schedule No. 42. I have used the rates of return and rate bases provided in the Company's filing in making this computation. The savings to consumers after the plant is placed in service will not change regardless of the finding that the Commission makes in this case. However, the current cost of CWIP in the rate base will be higher if the Company's position is accepted rather than mine. If the Commission accepts the Company's position, the present value of the aggregate CWIP-based rates will be higher than the non-CWIP-based rates if discounted at 15%. Additionally the break-even dates will be later if the aggregrate rates are discounted at 5% or 10% as shown below. The workpapers supporting this summary are included in Exhibit No.______(RRC-3).

In-Service Date	Discount Rate	Break-Even Date
Jan., 1984	5%	1991
	10%	1995
Jan., 1985	5%	1992
	10%	1996

The cost of the inclusion of CWIP in the rate base will be higher currently under either the Company's proposal or mine. If we can accept the figure of 10% as the appropriate discount rate, ratepayers will break even on a present value basis seven years after the plant is placed in rate base if CWIP is included and the allowed return on equity in this case is 16.8%. I believe that seven years is long enough to wait to break even after paying for extraordinary relief to the Company through the inclusion of CWIP in ratebase. If the Company's proposal is accepted ratepayers would have to wait eleven years after the plant is placed in service to break even.

Q. Is EUA currently in a situation of severe financial distress?

A. The Company is not currently suffering from severe financial distress because it is currently collecting rates subject to refund which are based on the inclusion of CWIP in rate base and the allowance of 18.0% for the return on equity. If CWIP were not allowed in rate base or the return on equity were substantially reduced, I believe that EUA would suffer from severe financial distress. In 1980 EUA was very close to a situation of severe financial distress as I have defined it. The Company earned a return on common equity of 9.5% in 1980. This was lower than the returns on equity earned by most electric utilities in that year but, on its face, it is not indicative of a severe problem. However, EUA had net internal financing equal to only 2.23% of its construction expenditures and a common dividend coverage of only 1.06 times in 1980. These ratios indicate that EUA was able to meet its cash obligations in 1980, but only by a small margin.

Q. Does this mean that you recommend that CWIP not be included?

A. No, it does not. I believe that both the Company and its customers would be best served by the inclusion of 16% of MEC's CWIP in rate base and the allowance of 16.8% for the return on equity. The Company's internal cash would be higher and the total cost to consumers through the service life of the plant would be lower. Additionally, since the allowed return on equity in this case will be used to compute MEC's AFUDC rate, the inclusion of 16% of MEC's CWIP and the allowance of 16.8% rather than 17.9% for the return on equity will produce AFUDC accruals on the remaining 84% of MEC's CWIP which will be lower. This will produce an additional savings to ratepayers.

I have shown that, if CWIP is not included in the rate base, an allowed return on equity of at least 17.9% will be required to prevent a condition of severe financial distress. This is much higher than the cost of capital of the comparable companies. It is obvious to me that MEC's customers will have to pay a higher return on equity than would be allowed for other similar utilities if a cash flow deficit for MEC is to be avoided. If CWIP is not included and 17.9% is the allowed return, ratepayers will have to pay higher rates now and also in the future. The inclusion of CWIP at a reduced rate of return is more advantageous to ratepayers because it will provide future savings which will more than offset the current increased cost.

Q. Is there another issue to be decided in this case, in addition to rate of return and rate base, which will have a significant bearing on MEC's cash flow and its ability to finance its construction program?

A. I believe that the amortization of the investment in the cancelled Pilgrim plant will be contested in this proceeding. Mr. Zero has supported an allowed annual amortization of $2.12 million. I have incorporated this allowance into my cash flow estimates.

Q. If this amortization amount is not allowed by the Commission, would your recommendations for the allowed returns on equity for rate bases including CWIP and not including CWIP still be realistic?

A. No, they would not. My estimates of the internal cash generated during the test year are not "fat" by any stretch of the imagination. The disallowance of the recovery of MEC's Pilgrim investment would damage the Company's ability to continue to finance its construction program. Therefore, if this amortization amount is not allowed by the Commission, the allowed return on equity or the amount of CWIP included in the rate base or both of these allowances would have to be higher.

Q. Should the returns on equity allowed for EUA's subsidiaries in determining the transmission rental rates be affected by the allowance or disallowance of 16% of MEC's CWIP in rate base?

A. Yes. The inclusion of 16% of MEC's CWIP in rate base will affect the risks of the entire EUA system. Therefore, the allowed return on the subsidiaries' equity to be used in the determining the transmission rentals should be 16.8% if CWIP is included in MEC's rate base and 17.9% if it is not.

Q. Does this conclude your prepared, direct testimony?

A. Yes.

Question II-19: Using an actual case prior to adopting the 1983 CWIP rule, where CWIP was allowed under the then applicable regulations for pollution control equipment or fuels conversion equipment, please provide the Committee with the actual rates charged by a utility installing such equipment and contrast those rates with the rates that would have been charged if the AFUDC method had been used.

Answer: Northern States Power Company, in Docket No. ER81-651-000, proposed a test period 1982 demand charge of $4.60 per kW. This charge was predicated upon $3,820,000 of test period pollution control CWIP, and an 11.37% overall rate of return. The portion of the $4.60 rate that is attributable directly to the pollution control CWIP is derived as follows:

> Convert 11.37% overall rate of return to 16.01% consolidated return and income tax factor. Apply the 16.01% consolidated return/tax factor to the total $3,820,000 pollution control CWIP in rate base to produce the return and taxes related to the CWIP. Apply the 3.71% demand ratio to the above result to derive the dollars related to the FERC jurisdictional service. Divide the above result by the customer billing demands to determine the portion of the $4.60/kW attributable to pollution control CWIP.
>
> [$3,820,000 x 16.01% x 3.71%]/1,687,448 kW = $0.013/kW
>
> Then, subtract the $0.013/kW from the $4.60/kW base to yield $4.587/kW, the applicable rate excluding CWIP from rate base. Note the necessary information that is required to adjust upward the value of all prior pollution control CWIP now in service during the test period, to reflect the capitalization of AFUDC that was not made due to Order No. 555, is unavailable. To more accurately reflect the effect on rates of AFUDC, this latter adjustment should also be made. This would serve to increase the $4.587/kW rate.

Question II-20: Please provide the data and assumptions used in preparing Chart II and IIA appended to Chairman O'Connor's testimony.

Answer: Charts II and IIA are based on single project analyses of the alternative AFUDC and 50% CWIP in rate base policies. The data are presented in the attached Table 1, based on the following assumptions:

(1) Five-year construction period and ten-year operating life; $100,000 construction expenditures in each of the five years of construction;

(2) All equity financing at 8% rate of return, with rate of return on rate base equal to AFUDC rate;

(3) Tax rate equals 50 percent;

(4) Straight-line depreciation for tax and ratemaking purposes;

(5) No investment tax credit;

(6) Beginning of year rate base and AFUDC base; beginning of year cash outflows; end of year cash inflows;

(7) Discount rate, for present value calculations, is 8 percent;

(8) Cost of capital is unaffected by CWIP in rate base policy.

It bears noting that these assumptions were extremely conservative and are consistent with the Commission's findings in Order No. 298: the example assumed no cost-of-capital penalty from AFUDC and that the time value of money is the same for utilities as for ratepayers. Under these assumptions, present values will be essentially equal, (as also illustrated by the Solomon example) meaning that at a minimum, consumers in the aggregate are not harmed by the CWIP approach. Responses to Question No. II-22 show present value based on assumptions that CWIP will in fact reduce the cost of capital. On these assumptions, over a thirty-year service life, customers are plainly benefitted.

Table 1. Required Revenue Comparisons for AFUDC and 50% CWIP Cases

Year	Constr. Expend. (1)	CWIP (2)	AFUDC (3)	Rate Base (4)	Deprec. (5)	Return (6)	Taxes (7)	Required Revs. (8)	Present Value Required Revs. (9)
AFUDC Case									
1	100,000	100,000	8,000						
2	100,000	208,000	16,640						
3	100,000	324,640	25,971						
4	100,000	450,611	36,049						
5	100,000	586,660	46,933						
6				633,593	63,359	50,687	64,046	178,092	112,198
7				570,233	63,359	45,619	58,978	167,956	97,918
8				506,874	63,359	40,550	53,909	157,818	85,222
9				443,515	63,359	35,481	48,840	147,680	73,840
10				380,156	63,359	30,412	45,771	137,542	63,682
11				316,796	63,359	25,344	38,703	127,406	54,657
12				253,437	63,359	20,275	33,634	117,268	46,555
13				190,078	63,359	15,206	28,565	107,130	39,424
14				126,719	63,359	10,138	23,497	96,993	32,978
15				63,359	63,359	5,069	18,428	86,855	27,359
TOTAL								1,324,740	633,883
50% CWIP Case									
1	100,000	100,000	4,000	50,000		4,000	4,000	8,000	7,408
2	100,000	204,000	8,160	102,000		8,160	8,160	16,320	13,986
3	100,000	312,160	12,486	156,080		12,486	12,486	24,972	19,828
4	100,000	424,646	16,986	212,323		16,986	16,986	33,972	24,969
5	100,000	541,632	21,665	270,816		21,665	21,665	43,330	29,508
6				563,297	56,330	45,064	51,394	152,788	96,256
7				506,967	56,330	40,557	46,887	143,774	83,820
8				450,637	56,330	36,051	42,381	134,762	72,771
9				394,307	56,330	31,545	37,875	125,749	62,874
10				337,977	56,330	27,038	33,368	116,736	54,049
11				281,647	56,330	22,532	28,862	107,724	46,214
12				225,317	56,330	18,025	24,355	98,711	39,188
13				168,987	56,330	13,519	19,849	89,698	33,009
14				112,657	56,330	9,013	15,343	80,685	27,433
15				56,327	56,327	4,506	10,836	71,672	22,577
TOTAL								1,248,893	633,890

Question II-21: Please provide the FERC's rationale in rejecting the use of a "financial difficulty" test before allowing CWIP.

Answer: The Commission's rationale in rejecting the use of a "financial difficulty" test before allowing CWIP is articulated in Order No. 298 and the related order on rehearing. The Commission has not spoken to this issue subsequently.

Question II-22a: Assume that a utility whose sales are entirely wholesale sales in interstate commerce with a $10 billion rate base undertakes construction of a $2 billion powerplant, that construction takes seven years, and that the plant has a 20-year useful life. Assume further that interest rates during construction average 12%. (Please specify whatever additional assumptions about fuel prices are necessary to use in order to answer the hypothetical questions posed.) What would happen to that utility's rates once the powerplant goes into service if AFUDC were used, as compared to the limited CWIP approved by the FERC?

Answer: The effects on rates are detailed in the attached workpapers. Three cases were prepared.

Case #1 used all the assumptions given in the question. The results are set forth in Charts IA and IB. The rate levels ("revenue required") cross over in the eighth year when the plant goes into service. From a present value perspective, the rates under the AFUDC approach are slightly lower than the CWIP-based rates over the life of the project. This results primarily from the assumed 20-year service life (which is unrealistically short for a $2 billion generation investment).

Case #2 used all of the assumptions given in the question except for the substitution of a more realistic 30-year service life. The results are set forth in Charts IIA and IIB. Again, rate levels are higher at the outset and lower when the plant goes into service. Moreover, from a present value perspective, rates under the AFUDC approach are slightly higher over the life of the plant than the CWIP-based rates.

Case #3 was developed to illustrate solely the cost difference attributable to the higher rate of return required by the AFUDC approach. The results are set forth in Charts IIIA and IIIB. The charts show that over a 37-year operating life, assuming a constant $10 billion rate base, the higher rate of return associated with the AFUDC case would increase rates by about $500,000,000 compared to the lower rate of return in the CWIP case. This case is particularly useful to illustrate that any cost of capital penalty required by the AFUDC approach applies to the utility's entire rate base, not just to the incremental capital used in the project under construction. Similarly, any cost of capital reduction made possible by allowing CWIP in rate base applies to the entire rate base.

We have excluded the effects of fuel costs in all runs, since a change in fuel cost would not bring about a change in the relative rate level positions of CWIP with or without AFUDC. Further assumptions were necessarily incorporated in our response:

The assumptions are as follows. Each is consistent with reasonable expectations of future economic and utility financial trends.

Base Line (No CWIP)

A. Overall cost of capital (long-term debt, preferred, equity) of 12.125%.

B. Cost of short-term debt of 12.00%.

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SPECIAL  PROJECT  ANALYSIS:  LIFE CYCLE PRESENT VALUE ANALYSIS OF A RATE BASE ADDITION WITH 50% OF CWIP IN RATE BASE  IA
FERC STAFF CALCULATIONS AND ANALYSIS BY ALLEN MOSHER     MAY 14, 1984   BASE LINE ANALYSIS: ORDER 298

YEAR RATE BASE  CONSTRUC  GROSS PLT   DEPREC    AVERAGE       AVERAGE    AVERAGE    RETURN     REVENUE      NET   PRESENT  VALUE
       CWIP     DEF TAXES  IN  SERV   EXPENSE   DEPR RESERVE  DEF TAX   RATE BASE   ON RB      REQUIRED    % RATE   ANNUAL    ACCUM
  1    7182.        0.         0.        0.          0.          0.       7182.      1375.      1375.   1.00000    1375.     1375.
  2   50104.        0.         0.        0.          0.          0.      50104.      9590.      9590.   0.92593    8880.    10254.
  3  223855.        0.         0.        0.          0.          0.     223855.     42846.     42846.   0.85734   36733.    46988.
  4  452451.        0.         0.        0.          0.          0.     452451.     86599.     86599.   0.79383   68745.   115733.
  5  626674.        0.         0.        0.          0.          0.     626674.    119945.    119945.   0.73503   88164.   203896.
  6  828403.        0.         0.        0.          0.          0.     828403.    158556.    158556.   0.68059  107911.   311807.
  7  875941.        0.         0.        0.          0.          0.     875941.    167655.    167655.   0.63017  105651.   417459.
  8       0.        0.   2000184.   100009.      50005.          0.    1950179.    373264.    473274.   0.58349  276152.   693610.
  9       0.        0.   2000184.   100009.     150014.          0.    1850170.    354123.    454132.   0.54027  245354.   938965.
 10       0.        0.   2000184.   100009.     250023.          0.    1750161.    334981.    434990.   0.50025  217604.  1156568.
 11       0.        0.   2000184.   100009.     350032.          0.    1650152.    315839.    415848.   0.46320  192619.  1349187.
 12       0.        0.   2000184.   100009.     450041.          0.    1550143.    296697.    396706.   0.42889  170142.  1519328.
 13       0.        0.   2000184.   100009.     550051.          0.    1450133.    277556.    377565.   0.39712  149937.  1669265.
 14       0.        0.   2000184.   100009.     650060.          0.    1350124.    258414.    358423.   0.36770  131792.  1801057.
 15       0.        0.   2000184.   100009.     750069.          0.    1250115.    239272.    339281.   0.34046  115513.  1916569.
 16       0.        0.   2000184.   100009.     850078.          0.    1150106.    220130.    320139.   0.31524  100922.  2017491.
 17       0.        0.   2000184.   100009.     950087.          0.    1050097.    200988.    300998.   0.29189   87859.  2105350.
 18       0.        0.   2000184.   100009.    1050097.          0.     950087.    181847.    281856.   0.27027   76178.  2181527.
 19       0.        0.   2000184.   100009.    1150106.          0.     850078.    162705.    262714.   0.25025   65745.  2247271.
 20       0.        0.   2000184.   100009.    1250115.          0.     750069.    143563.    243572.   0.23171   56439.  2303710.
 21       0.        0.   2000184.   100009.    1350124.          0.     650060.    124421.    224431.   0.21455   48152.  2351861.
 22       0.        0.   2000184.   100009.    1450133.          0.     550051.    105280.    205289.   0.19866   40782.  2392643.
 23       0.        0.   2000184.   100009.    1550143.          0.     450041.     86138.    186147.   0.18394   34240.  2426883.
 24       0.        0.   2000184.   100009.    1650152.          0.     350032.     66996.    167005.   0.17032   28444.  2455326.
 25       0.        0.   2000184.   100009.    1750161.          0.     250023.     47854.    147864.   0.15770   23318.  2478644.
 26       0.        0.   2000184.   100009.    1850170.          0.     150014.     28713.    128722.   0.14602   18796.  2497439.
 27       0.        0.   2000184.   100009.    1950179.          0.      50005.      9571.    109580.   0.13520   14816.  2512254.
CUMULATIVE TOTALS          2000184.              2000184.          0.          0.             6415091.            2512254.

DEPRECIATION RATE =  .050000
RATE OF RETURN INCL TAXES =  .1914
NET PRESENT VALUE ANALYSIS RATE =  1.08
ACCUM DEF TAXES AT IN-SERVICE DATE =      0.
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I-B

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SPECIAL  PROJECT  ANALYSIS:  LIFE CYCLE PRESENT VALUE ANALYSIS OF A RATE BASE ADDITION WITH AFUDC
FERC STAFF CALCULATIONS AND ANALYSIS BY ALLEN MOSHER     MAY 14, 1984     BASE LINE ANALYSIS:  AFUDC

YEAR RATE BASE  CONSTRUC  GROSS PLT   DEPREC    AVERAGE     AVERAGE    AVERAGE    RETURN   REVENUE     NET    PRESENT  VALUE
        CWIP    DEF TAXES  IN  SERV   EXPENSE  DEPR RESERVE DEF TAX   RATE BASE   ON RB   REQUIRED   % RATE   ANNUAL    ACCUM
  1       0.        0.          0.        0.          0.       0.          0.        0.        0.  1.00000       0.        0.
  2       0.        0.          0.        0.          0.       0.          0.        0.        0.  0.92593       0.        0.
  3       0.        0.          0.        0.          0.       0.          0.        0.        0.  0.85734       0.        0.
  4       0.        0.          0.        0.          0.       0.          0.        0.        0.  0.79383       0.        0.
  5       0.        0.          0.        0.          0.       0.          0.        0.        0.  0.73503       0.        0.
  6       0.        0.          0.        0.          0.       0.          0.        0.        0.  0.68059       0.        0.
  7       0.        0.          0.        0.          0..      0.          0.        0.        0.  0.63017       0.        0.
  8       0.        0.    2345956.   117298.      58649.       0.    2287307.   446711.   564009.  0.58349  329095.   329095.
  9       0.        0.    2345956.   117298.     175947.       0.    2170009.   423803.   541101.  0.54027  292341.   621436.
 10       0.        0.    2345956.   117298.     293244.       0.    2052712.   400895.   518192.  0.50025  259226.   880662.
 11       0.        0.    2345956.   117298.     410542.       0.    1935414.   377986.   495284.  0.46320  229414.  1110075.
 12       0.        0.    2345956.   117298.     527840.       0.    1818116.   355078.   472376.  0.42889  202595.  1312670.
 13       0.        0.    2345956.   117298.     645138.       0.    1700818.   332170.   449467.  0.39712  178491.  1491160.
 14       0.        0.    2345956.   117298.     762436.       0.    1583520.   309261.   426559.  0.36770  156846.  1648006.
 15       0.        0.    2345956.   117298.     879733.       0.    1466223.   286353.   403651.  0.34046  137429.  1785434.
 16       0.        0.    2345956.   117298.     997031.       0.    1348925.   263445.   380743.  0.31524  120027.  1905460.
 17       0.        0.    2345956.   117298.    1114329.       0.    1231627.   240537.   357834.  0.29189  104449.  2009909.
 18       0.        0.    2345956.   117298.    1231627.       0.    1114329.   217628.   334926.  0.27027   90521.  2100430.
 19       0.        0.    2345956.   117298.    1348925.       0.     997031.   194720.   312018.  0.25025   78083.  2178513.
 20       0.        0.    2345956.   117298.    1466222.       0.     879734.   171812.   289110.  0.23171   66991.  2245503.
 21       0.        0.    2345956.   117298.    1583520.       0.     762436.   148904.   266201.  0.21455   57114.  2302616.
 22       0.        0.    2345956.   117298.    1700818.       0.     645138.   125995.   243293.  0.19866   48332.  2350948.
 23       0.        0.    2345956.   117298.    1818116.       0.     527840.   103087.   220385.  0.18394   40538.  2391486.
 24       0.        0.    2345956.   117298.    1935414.       0.     410542.    80179.   197477.  0.17032   33634.  2425119.
 25       0.        0.    2345956.   117298.    2052711.       0.     293245.    57271.   174568.  0.15770   27530.  2452648.
 26       0.        0.    2345956.   117298.    2170009.       0.     175947.    34362.   151660.  0.14602   22145.  2474793.
 27       0.        0.    2345956.   117298.    2287307.       0.      58649.    11454.   128752.  0.13520   17408.  2492200.
CUMULATIVE TOTALS         2345956.              2345956.       0.          0.             6927597.           2492200.

DEPRECIATION RATE =   .050000
RATE OF RETURN INCL TAXES =   .1953
NET PRESENT VALUE ANALYSIS RATE =  1.08
ACCUM DEF TAXES AT IN-SERVICE DATE =       0.
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II-A

SPECIAL PROJECT ANALYSIS: LIFE CYCLE PRESENT VALUE ANALYSIS OF A RATE BASE ADDITION WITH 50% OF CWIP IN RATE BASE
FERC STAFF CALCULATIONS AND ANALYSIS BY ALLEN MOSHER MAY 14, 1984 PLANT DEPRECIATION LIFE = 30 YEARS

YEAR	RATE BASE CWIP	CONSTRUC DEF TAXES	GROSS PLT IN SERV	DEPREC EXPENSE	AVERAGE DEPR RESERVE	AVERAGE DEF TAX	AVERAGE RATE BASE	RETURN ON RB	REVENUE REQUIRED	NET % RATE	PRESENT VALUE ANNUAL	PRESENT VALUE ACCUM
1	7182.	0.	0.	0.	0.	0.	7182.	1375.	1375.	1.00000	1375.	1375.
2	50104.	0.	0.	0.	0.	0.	50104.	9590.	9590.	0.92593	8880.	10254.
3	223855.	0.	0.	0.	0.	0.	223855.	42846.	42846.	0.85734	36733.	46988.
4	452451.	0.	0.	0.	0.	0.	452451.	86599.	86599.	0.79383	68745.	115733.
5	626674.	0.	0.	0.	0.	0.	626674.	119945.	119945.	0.73503	88164.	203896.
6	828403.	0.	0.	0.	0.	0.	828403.	158556.	158556.	0.68059	107911.	311807.
7	875941.	0.	0.	0.	0.	0.	875941.	167655.	167655.	0.63017	105651.	417459.
8	0.	0.	2000184.	66672.	33336.	0.	1966848.	376455.	443127.	0.58349	258561.	676020.
9	0.	0.	2000184.	66672.	100008.	0.	1900176.	36.694.	430366.	0.54027	232514.	908534.
10	0.	0.	2000184.	66672.	166680.	0.	1833504.	350933.	417605.	0.50025	208907.	1117441.
11	0.	0.	2000184.	66672.	233352.	0.	1766832.	338172.	404844.	0.46320	187522.	1304962.
12	0.	0.	2000184.	66672.	300025.	0.	1700159.	325410.	392083.	0.42889	168158.	1473120.
13	0.	0.	2000184.	66672.	366697.	0.	1633487.	312649.	379322.	0.39712	150635.	1623754.
14	0.	0.	2000184.	66672.	433369.	0.	1566815.	299888.	366561.	0.36770	134785.	1758538.
15	0.	0.	2000184.	66672.	500041.	0.	1500143.	287127.	353799.	0.34046	120456.	1878993.
16	0.	0.	2000184.	66672.	566713.	0.	1433471.	274366.	341038.	0.31524	107510.	1986503.
17	0.	0.	2000184.	66672.	633385.	0.	1366799.	261605.	328277.	0.29189	95822.	2082324.
18	0.	0.	2000184.	66672.	700057.	0.	1300127.	248844.	315516.	0.27027	85275.	2167599.
19	0.	0.	2000184.	66672.	766730.	0.	1233454.	236083.	302755.	0.25025	75765.	2243364.
20	0.	0.	2000184.	66672.	833402.	0.	1166782.	223322.	289994.	0.23171	67196.	2310559.
21	0.	0.	2000184.	66672.	900074.	0.	1100110.	210561.	277233.	0.21455	59481.	2370039.
22	0.	0.	2000184.	66672.	966746.	0.	1033438.	197800.	264472.	0.19866	52540.	2422578.
23	0.	0.	2000184.	66672.	1033418.	0.	966766.	185039.	251711.	0.18394	46300.	2468878.
24	0.	0.	2000184.	66672.	1100090.	0.	900094.	172278.	238950.	0.17032	40697.	2509575.
25	0.	0.	2000184.	66672.	1166762.	0.	833422.	159517.	226189.	0.15770	35670.	2545245.
26	0.	0.	2000184.	66672.	1233434.	0.	766750.	146756.	213428.	0.14602	31165.	2576409.
27	0.	0.	2000184.	66672.	1300107.	0.	700077.	133995.	200667.	0.13520	27131.	2603539.
28	0.	0.	2000184.	66672.	1366779.	0.	633405.	121234.	187906.	0.12519	23524.	2627062.
29	0.	0.	2000184.	66672.	1433451.	0.	566733.	108473.	175145.	0.11592	20302.	2647364.
30	0.	0.	2000184.	66672.	1500123.	0.	500061.	95712.	162384.	0.10733	17429.	2664792.
31	0.	0.	2000184.	66672.	1566795.	0.	433389.	82951.	149623.	0.09938	14869.	2679661.
32	0.	0.	2000184.	66672.	1633467.	0.	366717.	70190.	136862.	0.09202	12594.	2692254.
33	0.	0.	2000184.	66672.	1700139.	0.	300045.	57429.	124101.	0.08520	10574.	2702827.
34	0.	0.	2000184.	66672.	1766812.	0.	233372.	44667.	111340.	0.07889	8784.	2711610.
35	0.	0.	2000184.	66672.	1833484.	0.	166700.	31906.	98579.	0.07305	7201.	2718810.
36	0.	0.	2000184.	66672.	1900156.	0.	100028.	19145.	85818.	0.06764	5804.	2724614.
37	0.	0.	2000184.	66672.	1966828.	0.	33356.	6384.	73056.	0.06263	4575.	2729189.
CUMULATIVE TOTALS			2000184.		2000164.	0.	20.		8329300.		2729189.	

DEPRECIATION RATE = .033333
RATE OF RETURN INCL TAXES = .1914
NET PRESENT VALUE ANALYSIS RATE = 1.08
ACCUM DEF TAXES AT IN-SERVICE DATE = 0.

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SPECIAL  PROJECT  ANALYSIS:  LIFE CYCLE PRESENT VALUE ANALYSIS OF A RATE BASE ADDITION WITH AFUDC
FERC STAFF CALCULATIONS AND ANALYSIS BY ALLEN MOSHER  MAY 14, 1984       PLANT DEPRECIATION LIFE = 30 YEARS     II-B

YEAR RATE BASE  CONSTRUC  GROSS PLT   DEPREC   AVERAGE       AVERAGE    AVERAGE   RETURN   REVENUE     NET  PRESENT  VALUE
        CWIP    DEF TAXES  IN  SERV   EXPENSE  DEPR RESERVE  DEF TAX  RATE BASE   ON RB    REQUIRED  % RATE  ANNUAL    ACCUM

  1       0.         0.         0.       0.          0.         0.         0.        0.        0.  1.00000      0.         0.
  2       0.         0.         0.       0.          0.         0.         0.        0.        0.  0.92593      0.         0.
  3       0.         0.         0.       0.          0.         0.         0.        0.        0.  0.85734      0.         0.
  4       0.         0.         0.       0.          0.         0.         0.        0.        0.  0.79383      0.         0.
  5       0.         0.         0.       0.          0.         0.         0.        0.        0.  0.73503      0.         0.
  6       0.         0.         0.       0.          0.         0.         0.        0.        0.  0.68059      0.         0.
  7       0.         0.         0.       0.          0.         0.         0.        0.        0.  0.63017      0.         0.
  8       0.         0.   2345956.   78198.      39099.         0.   2306857.   450529.   528727.  0.58349 308508.    308508.
  9       0.         0.   2345956.   78198.     117297.         0.   2228659.   435257.   513455.  0.54027 277405.    585913.
 10       0.         0.   2345956.   78198.     195494.         0.   2150462.   419985.   498183.  0.50025 249217.    835130.
 11       0.         0.   2345956.   78198.     273692.         0.   2072264.   404713.   482911.  0.46320 223682.   1058812.
 12       0.         0.   2345956.   78198.     351890.         0.   1994066.   389441.   467639.  0.42889 200563.   1259375.
 13       0.         0.   2345956.   78198.     430088.         0.   1915868.   374169.   452367.  0.39712 179642.   1439017.
 14       0.         0.   2345956.   78198.     508285.         0.   1837671.   358897.   437095.  0.36770 160720.   1599737.
 15       0.         0.   2345956.   78198.     586483.         0.   1759473.   343625.   421823.  0.34046 143615.   1743352.
 16       0.         0.   2345956.   78198.     664681.         0.   1681275.   328353.   406551.  0.31524 128163.   1871514.
 17       0.         0.   2345956.   78198.     742879.         0.   1603077.   313081.   391279. [illegible].29189 114212.   1985725.
 18       0.         0.   2345956.   78198.     821076.         0.   1524880.   297809.   376007.  0.27027 101624.   2087348.
 19       0.         0.   2345956.   78198.     899274.         0.   1446682.   282537.   360735.  0.25025  90274.   2177622.
 20       0.         0.   2345956.   78198.     977472.         0.   1368484.   267265.   345463.  0.23171  80049.   2257670.
 21       0.         0.   2345956.   78198.    1055670.         0.   1290286.   25[illegible]993.   330191.  0.21455  70843.   2328512.
 22       0.         0.   2345956.   78198.    1133867.         0.   1212089.   236721.   314919.  0.19866  62561.   2391073.
 23       0.         0.   2345956.   78198.    1212065.         0.   1133891.   221449.   299647.  0.18394  55118.   2446190.
 24       0.         0.   2345956.   78198.    1290263.         0.   1055693.   206177.   284375.  0.17032  48434.   2494623.
 25       0.         0.   2345956.   78198.    1368461.         0.    977495.   190905.   269103.  0.15770  42438.   2537060.
 26       0.         0.   2345956.   78198.    1446658.         0.    899298.   175633.   253831.  0.14602  37064.   2574124.
 27       0.         0.   2345956.   78198.    1524856.         0.    821100.   160361.   238559.  0.13520  32254.   2606378.
 28       0.         0.   2345956.   78198.    1603054.         0.    742902.   145089.   223287.  0.12519  27953.   2634330.
 29       0.         0.   2345956.   78198.    1681252.         0.    664704.   129817.   208014.  0.11592  24112.   2658442.
 30       0.         0.   2345956.   78198.    1759449.         0.    586507.   114545.   192742.  0.10733  20687.   2679128.
 31       0.         0.   2345956.   78198.    1837647.         0.    508309.    99273.   177470.  0.09938  17637.   2696764.
 32       0.         0.   2345956.   78198.    1915845.         0.    430111.    84001.   162198.  0.09202  14925.   2711689.
 33       0.         0.   2345956.   78198.    1994043.         0.    351913.    68729.   146926.  0.08520  12518.   2724207.
 34       0.         0.   2345956.   78198.    2072240.         0.    273716.    53457.   131654.  0.07889  10386.   2734593.
 35       0.         0.   2345956.   78198.    2150438.         0.    195518.    38185.   116382.  0.07305   8501.   2743094.
 36       0.         0.   2345956.   78198.    2228636.         0.    117320.    22913.   101110.  0.06764   6839.   2749932.
 37       0.         0.   2345956.   78198.    2306834.         0.     39122.     7641.    85838.  0.06263   5376.   2755307.
CUMULATIVE TOTALS         2345956.              2345933.         0.        23.           [illegible]218462.          2755307.

DEPRECIATION RATE =  .033333
RATE OF RETURN INCL TAXES =  .1953
NET PRESENT VALUE ANALYSIS RATE =  1.08
ACCUM DEF TAXES AT IN-SERVICE DATE =      0.
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SPECIAL PROJECT ANALYSIS:  LIFE CYCLE PRESENT VALUE OF A CONSTANT $10 BILLION RATE BASE <ADDITIONS = DEPRECIATION>
FERC STAFF CALCULATIONS AND ANALYSIS BY ALLEN MOSHER  MAY 14, 1984   BASE LINE ANALYSIS: CWIP BASIS RATE OF RETURN
YEAR RATE BASE         GROSS PLANT   DEPREC              AVERAGE     RETURN     REVENUE    NET       PRESENT     VALUE
       CWIP            IN SERVICE    EXPENSE             RATE BASE   ON RB      REQUIRED   % RATE    ANNUAL      ACCUMULAT
  1          0.         10000000.    333330.             10000000.   1913999.   2247328.   1.00000   2247328.    2247328.
  2          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.92593   2080859.    4328187.
  3          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.85734   1926723.    6254910.
  4          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.79383   1784003.    8038913.
  5          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.73503   1651856.    9690769.
  6          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.68059   1529497.   11220266.
  7          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.63017   1416202.   12636468.
CUMULATIVE TOTALS       10000000.                        10000000.             15731296.                         12636468.

  8          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.58349   1311299.   13947767.
  9          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.54027   1214166.   15161933.
 10          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.50025   1124229.   16286162.
 11          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.46320   1040954.   17327104.
 12          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.42889    963846.   18290944.
 13          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.39712    892451.   19183392.
 14          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.36770    826344.   20009728.
 15          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.34046    765134.   20774848.
CUMULATIVE TOTALS       10000000.                        10000000.             33709920.                         20774848.

 16          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.31524    708458.   21483296.
 17          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.29189    655980.   22139264.
 18          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.27027    607389.   22746640.
 19          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.25025    562398.   23309024.
 20          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.23171    520739.   23829760.
 21          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.21455    482166.   24311920.
 22          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.19866    446450.   24758368.
 23          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.18394    413380.   25171744.
 24          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.17032    382759.   25554496.
 25          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.15770    354407.   25908896.
 26          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.14602    328155.   26237040.
 27          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.13520    303847.   26540880.
CUMULATIVE TOTALS       10000000.                        10000000.             60677856.                         26540880.

 28          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.12519    281340.   26822208.
 29          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.11592    260500.   27082704.
 30          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.10733    241204.   27323904.
 31          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.09938    223337.   27547232.
 32          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.09202    206794.   27754016.
 33          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.08520    191476.   27945488.
 34          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.07889    177293.   28122768.
 35          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.07305    164160.   28286912.
 36          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.06764    152000.   28438912.
 37          0.         10000000.    333330.             10000000.   1913999.   2247328.   0.06263    140741.   28579648.
CUMULATIVE TOTALS       10000000.                        10000000.             83151136.                         28579648.

DEPRECIATION RATE =  .033333
RATE OF RETURN INCL TAXES =  .1914
NET PRESENT VALUE ANALYSIS RATE =  1.08
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IIIA

III B

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SPECIAL PROJECT ANALYSIS:  LIFE CYCLE PRESENT VALUE OF A CONSTANT $10 BILLION RATE BASE <ADDITIONS = DEPRECIATION>
FERC STAFF CALCULATIONS AND ANALYSIS BY ALLEN MOSHER  MAY 14, 1984   BASE LINE ANALYSIS: AFUDC BASIS RATE OF RETURN

YEAR RATE BASE       GROSS PLANT   DEPREC                    AVERAGE      RETURN     REVENUE     NET       PRESENT      VALUE
        CWIP          IN SERVICE    EXPENSE                   RATE BASE    ON RB      REQUIRED    % RATE    ANNUAL     ACCUMULATED

 1         0.          10000000.    333330.                  10000000.   1952999.   2286328.   1.00000   2286328.   2286328.
 2         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.92593   2116970.   4403298.
 3         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.85734   1960159.   6363457.
 4         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.79383   1814963.   8178420.
 5         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.73503   1680522.   9858942.
 6         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.68059   1556040.  11414982.
 7         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.63017   1440778.  12855760.
CUMULATIVE TOTALS      10000000.                             10000000.             16004296.                        12855760.

 8         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.58349   1334055.  14189815.
 9         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.54027   1235237.  15425052.
10         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.50025   1143738.  16568790.
11         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.46320   1059018.  17627808.
12         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.42889    980573.  18608368.
13         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.39712    907939.  19516304.
14         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.36770    840684.  20356976.
15         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.34046    778412.  21135376.
CUMULATIVE TOTALS      10000000.                             10000000.             34294864.                        21135376.

16         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.31524    720752.  21856128.
17         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.29189    667364.  22523488.
18         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.27027    617930.  23141408.
19         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.25025    572157.  23713552.
20         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.23171    529775.  24243312.
21         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.21455    490533.  24733840.
22         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.19866    454198.  25188032.
23         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.18394    420554.  25608576.
24         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.17032    389402.  25997968.
25         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.15770    360557.  26358512.
26         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.14602    333850.  26692352.
27         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.13520    309120.  27001472.
CUMULATIVE TOTALS      10000000.                             10000000.             61730704.                        27001472.

28         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.12519    286223.  27287680.
29         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.11592    265021.  27552688.
30         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.10733    245390.  27798064.
31         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.09938    227213.  28025264.
32         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.09202    210383.  28235632.
33         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.08520    194799.  28430416.
34         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.07889    180369.  28610784.
35         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.07305    167009.  28777792.
36         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.06764    154638.  28932416.
37         0.          10000000.    333330.                  10000000.   1952999.   2286328.   0.06263    143183.  29075584.
CUMULATIVE TOTALS      10000000.                             10000000.             84593904.                        29075584.

DEPRECIATION RATE =  .033333
RATE OF RETURN INCL TAXES =  .1953
NET PRESENT VALUE ANALYSIS RATE =  1.08
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C. Representative capital ratios for rate base are 45% debt, 10% preferred stock, 45% equity stock.

D. CWIP not in rate base is financed through AFUDC. The AFUDC rate is based on 10% ratio of short-term debt and 90% on the overall capital structure.

E. The utility has a net-of-tax AFUDC rate to account for normalization of CWIP-related interest expense.

F. The combined Federal and state income tax rate is 50%.

G. Construction requires 7 years. After 5 years the CWIP balance is $1.5 billion under Order No. 298, including all expenditures, AFUDC and CWIP included in rate base. The final CWIP total is $2.0 billion under Order No. 298.

H. The plant is depreciated over 20 years (in case no. 1) or 30 years in (case no. 2) at a 5% straight-line rate applied to the gross plant balance on the in-service date.

I. No premature retirement of plant occurs.

J. The utility earns a return on rate base plus an income-tax allowance.

K. The reduction in stock and bondholder risk associated with CWIP in rate base is expected to be approximately 0.25% for all capital costs, including short-term debt (0.4% overall for the consolidated return/tax factor).

L. Consumers have a long-run opportunity cost of approximately 8% after taxes, based on generally available investment opportunities and borrowing costs, and a marginal personal Federal-state income tax rate of 30%.

M. The AFUDC calculation methodologies used generally conform to practices approved by the FERC Chief Accountant.

Analysis of Capital Cost, Income Tax, AFUDC Rate and Discount Factors

1. Rate of Return on Rate Base

Component	Cost %	Ratio %	Weighted Cost No Rate Base CWIP	Less 0.25% Risk Discount	Order 298 50% of CWIP in Rate Base
Equity	14.00	45.00	6.300	(.1125)	6.1875
Preferred	11.00	10.00	1.100	(.025)	1.0750
Long-Term Debt	10.50	45.00	4.725	(.1125)	4.6125
Total		100.00%	12.125%	0.2500%	11.875%

2. Return Factor: Rate of Return plus Income Taxes, net of interest on Long-Term Debt

   a. Tax Rate, Income: Federal-State Composite = .50

   b. Tax Factor = $\frac{TR}{1-TR} = \frac{.50}{1-.50} = 1.0$

   c. Return Factor = Return + TR (Return--Long-Term Debt)
   No Rate Base CWIP = 12.125 + 1.0 (12.125 - 4.725) = 19.5250 = 19.53%
   Order 298 = (50%) = 11.875 + 1.0 (11.875 - .046125) = 19.1375 = 19.14%

3. AFUDC Rate: 90% of overall capital cost. 10% short-term debt, less adjustment to a net-of-tax basis for debt components.

   a. No Rate Base CWIP

	WTD Cost		Ratio		Tax Rate		
A_e Equity	6.300						
Preferred	1.100						
	7.900	x	90.00	=	6.660		6.660%
A_i Long Term Debt	4.725	x	90.00	=	4.2525		
Short Term Debt	12.00	x	10.00	=	1.2000		
					5.4525	x .50=	2.72625%
							9.38625%

Net of Tax Rate Per Month = .0078219
Decimal

   b. Order 298 Rate Base CWIP

Component	Cost	Ratio	Weighted Cost	Net of Tax Adjustment	Totals
Ae Equity	6.1875				
Preferred	1.0750				
	7.2625	90.0	6.53625	-	6.53625
Ai Long Term Debt	4.6125	90.0	4.15125		
Short Term	11.750	10.0	1.1750		
			5.32625	(.50)	2.663125
					9.199375

Total = 9.200%
Net of Tax Per Month = .0076667
Decimal

4. Depreciation Rates

   a. Powerplant Rate Base Addition

      1) Base Line: 20 years with no salvage value = 1/20 = .05000/year
      2) Preferred
      Alternate: 30 years with no salvage value = 1/30 = .03333/year

   b. Other Rate Base

   Base Line: 30 years with no salvage value = 1/30 = 0.3333/year

5. Non-Powerplant Rate Base

> Depreciation expense revenues are used immediately to replace plant depreciated. Depreciation expense equals retirements which equals additions. Thus gross plant equals net plant equals non-powerplant rate base.

Assuming a 20-year life, the total present value of the annual revenues generated over both the construction period and the 20-year service life of the project would be $2,512,254,000 for the 50% CWIP in rate base alternative (IA) compared to $2,492,200,000 for the AFUDC capitalized alternative (IB). Modifying this comparison with incorporation of a more reasonable wholesale jurisdictional facility service life of 30 years, the present value of the accumulated annual revenue collections would be $2,729,189,000 (IIA) for the CWIP alternative and $2,755,307,000 (IIB) for the AFUDC capitalized alternative. Modifying this last comparison by incorporating the $10 billion original rate base, produces an additional accumulated present value revenue stream of $28,579,648,000 (IIIA) for the CWIP in rate base alternative compared to an additional $29,075,584,000 (IIIB) for the no-CWIP alternative.

Question II-22b: What would happen to that utility's rates if construction of the powerplant were to be abandoned after five years and $1.5 billion had been spent with AFUDC? What would happen under the same circumstances if the limited CWIP approved by the FERC had been allowed? Please explain in detail.

In the event construction were abandoned after five years the utility would stop incurring direct construction costs and would cease accruing AFUDC. The amount of AFUDC accumulated up until the decision to abandon the project would be added to the direct construction costs and the utility would then make a rate filing to recover the total via amortization. Assuming that the costs incurred were prudent, the utility would be allowed to recover all of these costs over time. The utility would be prohibited from earning any return on the unamortized portion, however.

Had 50% CWIP been sought and approved in individual rate cases, the utility would accrue substantially less AFUDC (i.e., less than one-half as much due to compounding). Again, when a decision is made to abandon the plant the utility stops incurring direct construction costs and ceases to accrue AFUDC. It would also have to exclude the CWIP from its existing rate base as the construction work in question would by definition no longer be "in progress" and would no longer qualify.

Assuming that all costs incurred were prudent, the utility would be allowed to amortize the direct construction costs and the accumulated AFUDC. The total would be less than under the AFUDC approach, since the amount of AFUDC would be less than one-half as much (the remainder of the carrying costs having already been collected during the construction period).

Question II-23: The 1983 rule has been challenged in court. What is the status of the case? When is the court likely to issue a decision? Please provide a brief explanation of the issues raised in the litigation.

Answer: The Commission's CWIP rule is currently being reviewed by the U.S. Court of Appeals for the District of Columbia Circuit in Mid-Tex Electric Cooperative, Inc., et al. v. FERC, Case No. 83-2058, et al. The initial and reply briefs have been filed with the court and oral argument will occur in October. The Commission does not, therefore, anticipate a decision until the spring of 1985. No petitioner has requested either the Commission or the reviewing court to stay the effectiveness of the 1983 rule pending the appeal. In the meantime, the Commission's rule is effective.

The issues raised on appeal by six petitioners' briefs are the same issues considered by the Commission in its proceeding. Petitioners present the following procedural issues:

(1) NEPA Compliance. Although the Commission conducted an environmental assessment under the National Environmental Policy Act (NEPA), petitioners allege that it should have prepared an Environmental Impact Statement because the rule is a "major Federal action that significantly affects the quality of the human environment."

(2) Scope of Notice. Some petitioners allege that they had inadequate notice that the Commission might issue a CWIP rule that does not depend on a utility's financial need.

(3) Regulatory Flexibility Act. Petitioners allege that the Commission erred in not analyzing the impact of the rule on the customers of the utilities to which the rule applies, even though the retail customers are not subject to federal regulation.

The petitioners also present several substantive issues:

(1) Used and Useful Doctrine. Petitioners contend that regulatory policy prevents the Commission from allowing to be reflected in rates any portion of costs associated with facilities under construction that are not serving ratepayers.

(2) Price Squeeze. Petitioners believe the rule could have anticompetitive effects, especially for utilities that sell power in states that do not allow CWIP in retail rates. They object to the Commission's decision to address this possibility on a case-by-case basis.

(3) Alternative Approaches. Petitioners contend that inadequate consideration was given to other methods of dealing with construction costs, such as contributions in aid of construction and joint ventures.

(4) Policy Inconsistencies. Petitioners allege that the CWIP rule conflicts with the cost-benefit matching principles explained in the Commission's Order No. 144 on tax normalization.

(5) Intergenerational Equity. Petitioners address various issues relating to alleged subsidies between generations of ratepayers and inequities that could result from the departure from a utility system of wholesale or retail customers whose past rates included CWIP-based charges for facilities not yet operational.

(6) Financial Difficulty. Petitioners contend that the CWIP rule was devised to resolve a problem that no longer exists, namely, the financial distress of the utility industry.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D. C. 20426

OFFICE OF THE CHAIRMAN

Honorable J. Bennett Johnston
Subcommittee on Energy Regulation
Committee on Energy and Natural
Resources
United States Senate
Washington, D. C. 20510

Dear Senator Johnston:

Enclosed are responses to the additional questions you have asked following up on the hearings on the inclusion in rate base of the costs of Construction Work in Progress (CWIP).

If I may be of further assistance, please let me know.

Sincerely,

Raymond J O'Connor

Raymond J. O'Connor
Chairman

Enclosure

cc: Honorable James A. McClure
Chairman, Committee on Energy
and Natural Resources

Question 1: Under what conditions does CWIP save consumers money? Are these the conditions that exist most of the time?

Answer: Over the life of a generating facility, recovering financing costs on a current (CWIP) rather than a deferred (AFUDC) basis will in most instances result in lower overall rates to customers. Inclusion of CWIP in rate base is a ratemaking tool which helps to assure that rates are set at the lowest reasonable level consistent with reliable long-term supply. When coupled with a review of prudence of claimed costs, CWIP is consistent with a least-cost approach to electric power planning.

The ratepayer savings resulting from collecting financing costs on a current (CWIP) rather than a deferred (AFUDC) basis will vary from one utility to another depending on a number of factors including:

1. the amount by which the utility's cost of capital is reduced by inclusion of CWIP;
2. the difference between ratepayers' present value discount rates and the utility's cost of capital;
3. the length of the service life as compared to the construction period;
4. the extent to which utility planning and operations become more efficient as a result of the prospect of FERC review of management prudence under the CWIP rule; and
5. the extent to which more accurate price signals enable utilities and their customers to plan more efficiently to meet future demands for power.

The current recovery of financing costs (the CWIP approach) will not increase rates over the service life of a project. Much attention is focused, however, on one situation where the current recovery approach would result in higher rates for a particular customer. This situation would result when a particular wholesal customer purchases power only during the construction period of a new facility but then leaves the system and fails to take advantage of the lower rates available over the service life of the plant.

The Commission's rule does have a provision which allows wholesale customers to avoid payment for CWIP during the construction period to the extent that they demonstrate that they will not purchase the power to be generated by the facility under construction and that the customer's demand was not a significant factor in the decision to build the plant. This point is discussed further below.

Question 2: How can I show the collection of CWIP rates is not automatic? How can I show that prudence is really looked at?

Answer: Authorization to include CWIP in rate base under the Commission's rule is not automatic. As detailed below, the applicant must provide documentation before the Commission will even accept the application for filing. Thereafter, the filing may be contested in litigation and reviewed for prudence.

CWIP Filing Requirements.

A utility seeking to include CWIP in rate base must comply with the filing requirements under the CWIP rule which compel the submission of considerable information to support the CWIP application, including a description of its program for providing reliable and economic power for the next 10 years:

- This ten year analysis must assess the relative costs of adopting alternative strategies including such alternatives as cogeneration, small power production, heightened load management and conservation efforts or increased purchases of power.
- The analysis must include an explanation as to why the program adopted is prudent and consistent with a least-cost energy supply program.

CWIP applications which fail to comply with the rule's threshold filing requirements may be summarily rejected. The Commission has in fact already taken this action in one application to date. This threshold review takes place before the CWIP rates can go into effect at all, even on an interim basis subject to refund.

Suspension of Rates.

Assuming that the threshold documentation is in compliance with the Commission's regulations, the Commission can issue an order suspending the CWIP-based rates, allowing them to go into effect subject to refund if it is later determined that they are not adequately supported. In every instance to date, the Commission has suspended CWIP-based filings and set them for trial. Settlements of the CWIP issue have been reached in several of these cases, while litigation is proceeding in the others.

Some commentors in the Commission's rulemaking proceeding opposed the provision allowing financing costs to go into rates subject to later refund with interest, in the event the applicant fails to prove his case at trial. But collection subject to refund does not mean that CWIP increases are "automatic" it means rather that financing costs for CWIP may be collected in the same manner as all other costs claimed by a utility until the Commission makes a final decision.

Review of Prudence.

It is a fundamental principle of public utility regulation that a utility is entitled to a reasonable opportunity to recover only its prudently incurred costs.

This principle is fully applicable to regulation by the FERC under the Natural Gas Act as well as the Federal Power Act. See e.g., Midwestern Gas Transmission Company, 36 FPC 61, 70 (1966), aff'd, Midwestern Gas Transmission Company v. FPC, 388 F.2d 444, 448 (7th Cir. 1968), cert. denied, 392 U.S. (1968) (Commission denied gas utility right of recovery from ratepayers of tax expenses imprudently incurred). As detailed below, the Commission has disallowed costs as imprudently incurred in a number of cases.

Sections 205(e) and 206 of the Federal Power Act, 16 U.S.C. § 842d(e) and 824e, require that jurisdictional utility rates be just and reasonable. The Act's primary aim is the protection of consumers from excessive rates and charges. See e.g., Towns of Alexandria, Minnesota, et al., v. FPC, 555 F.2d 1020, 1028 (D.C. Cir. 1977); Gulf States Utilities Company v. FPC, 411 U.S. 747 (1943); American Public Power Association v. FPC, 522 F.2d 142, 147 (D.C. Cir. 1975).

Section 205(e) of the Federal Power Act imposes on the utility the "burden of proof to show that the increased rate or charge is just and reasonable." 16 U.S.C. § 824d(e). The utility's costs are presumed to be prudently incurred. See Missouri ex rel. Southwestern Bell Telephone Company v. Missouri Public Service Commission, 262 U.S. 276, 289 n. 1 (1923). However, the presumption of prudence does not survive "a showing of inefficiency or improvidence." West Ohio Gas Company v. Public Utilities Commission, 294 U.S. 63, 72 (1935); See also Acker v. United States, 298 U.S. 426, 430-431 (1935). Thus, while the utility seeking a rate increase is not required to demonstrate in its case-in-chief that all expenditures were prudent, if a participant creates a serious doubt as to the prudence of an expenditure, the utility seeking the increase must dispel these doubts by proving the reasonableness of the expenditure. See, e.g., Minnesota Power & Light Company, Opinion No. 86, 11 FERC (CCH) ¶ 61,312 at pp. 61,644-61,645 (1980).

In electric rate cases, the Commission reviews prudence on a case-by-case basis. For example, in Public Service Company of New Hampshire, Opinion No. 37, 6 FERC (CCH) ¶ 61,299 (1979), the Commission ruled that certain of the utility's coal purchase costs were imprudent because the utility bought higher cost spot coal when it had access to fixed cost contract coal. The utility was not allowed to charge its ratepayers for the excess coal costs. Similarly, in Minnesota Power & Light Company, Opinion No. 87, 11 FERC (CCH) ¶ 61,313 at p. 61,659 (1980) the Commission disallowed the amortization of losses associated with pollution control facilities due to the utility's selection of questionable equipment, failure to seek damages from the manufacturer and the taint of self-dealing. Again, in the Cities of Anaheim, et al., v. FERC, 669 F.2d 799, 800-801 (D.C. Cir. 1981), aff'g Southern California Edison Company, Opinion No. 62, 8 FERC (CCH) ¶ 61,198 (1979) at pp. 61,679-61,680, the Court upheld a Commission ruling that a state regulatory agency's determination that the utility was imprudent in the construction and cancellation of a plant is sufficient to raise a serious doubt as to the prudence before this Commission. Since the utility failed to dispel the serious doubt in that case, the costs in question were denied.

Prudence of construction costs for which rate base treatment is sought under the 1983 CWIP rule will continue to be examined on a case-by-case basis in accordance with this applicable law.

Question 3A: Realistically, what do we know about the "price squeeze" problem.

Answer: "Price squeeze" is the situation where: (1) there is a difference in wholesale and retail rates charged by a utility; (2) the difference is not based on the difference in the costs to serve these rate classes; and (3) the wholesale customer is inhibited by this difference in its ability to compete at retail with its supplier. The difference in rates in such a case would derive from the utility's retail profit margin being less than its wholesale profit margin. Finally, for a price squeeze to exist, both the utility and the wholesale customer must be in competition, at least potentially, for the customers that might be served by the advantageous retail rate.

By one estimate, price squeeze has been alleged by wholesale customers in a minimum of 180 cases since 1975. Routinely, however, the issue is resolved as part of a comprehensive settlement package. Staff's review of the cases where the issue has been litigated over the last eight years indicates that actual findings on the price squeeze issue have been made by Administrative Law Judges in approximately 28 cases. In only four or five instances has the Judge found a price squeeze to exist as alleged. In the remaining cases, the Judge found the allegations to be unsupported by the facts in the record. In only one case has the Commission itself found that a price squeeze existed, and in that same case the Commission found that a remedy was not warranted due to mitigating circumstances. This case has since been remanded by the reviewing court and is awaiting further Commission action.

Question 3B: How much does the CWIP rule affect it?

Answer: Treatment of CWIP is merely one of many ratemaking methods as to which state and federal policy may differ. Different treatment of any significant cost can produce a difference in revenue requirements and may therefore, if certain other conditions prevail, result in a "price squeeze." If the differing ratemaking treatment results in retail rates being higher than wholesale rates, then the "squeeze" might be placed on the wholesale seller rather than the wholesale purchaser. This might be termed a "reverse" price squeeze. If, on the other hand, the differing ratemaking treatment results in retail rates being lower than wholesale rates then the "squeeze" might fall on the wholesale purchaser.

If a state has a policy of excluding CWIP in rate base, then CWIP-based rates at the federal level may cause a difference in rates in the early years of a large construction program. If the other conditions for a price squeeze are met, this rate difference may constitute a price squeeze.

In later years, however, under the same set of circumstances, a state policy excluding CWIP may begin to create a "reverse" price squeeze in favor of the wholesale customers, due to the higher cost of plant included in the retail rate base as construction projects with high capitalized financing costs are completed and go on-line.

The majority of states allow utilities to include CWIP in rate base under certain circumstances. A table detailing this information on a state by state basis has already been provided for the record.

As indicated on the attached chart, allegations of price squeeze have been made in 12 of the 19 CWIP cases filed as of June 11, 1984. Again, in all CWIP filings where such allegations have been made, the Commission has set the matter for formal hearing in which all parties will have an opportunity to litigate any price squeeze allegations.

Question 4: Wholesale customers claim they are forced to pay twice for powerplants when they decide to build for themselves because, while they wait for their plant to come on line, they can't get out of CWIP rates to their supplier. The contention is that the condition FERC requires to avoid CWIP rates for this reason can't be met.

Answer: The Commission's rule on CWIP was sensititve to this issue and includes a reasonable test to allocate costs under these types of circumstances. The rule states that the test:

> . . . should operate to permit, on a case-by-case basis where all of the pertinent facts are known, consideration of whether a facility under construction will serve the needs of a specific wholesale customer or group of wholesale customers. A utility

> must first adequately support its requests for CWIP in rate base, including the proper allocation of CWIP plant to wholesale customers. While the utility retains the ultimate burden of persuasion with respect to its rate application, the burden of going forward to establish both that the customer's demand was not a significant factor in the utility's decision to build a facility and that the customer will definitely leave the filing utility's system by the time the plant is operational or during its operational life, shifts to the customer making such a claim. This burden might be met by documentary evidence such as a notice of cancellation or a contractual agreement to terminate purchases by a specific date.
>
> This approach should preclude improper CWIP allocation where CWIP generation or transmission projects will be serving other customers, possibly including situations where wholesale customers will partially or totally leave the utility system.

This approach should enable the Commission to determine a fair allocation of CWIP costs on a case-by-case basis.

Moreover, most states have certification procedures which allow interested persons to participate in the decision to allow construction of a major new facility. Wholesale customers are free to participate in such proceedings, which may examine such issues as load forecasts and need for power.

SUMMARY OF CWIP FILINGS UNDER ORDER NO. 298
(As of June 11, 1984)

Company	Docket No.	Commission Action	Order 298 $ Impact	Order 298 % Impact	Price Squeeze Alleged
Southwestern Elec.	ER83-609	Suspended	121,000	5.95%	YES
VEPCO	ER83-618	Suspended	9,161,000	3.8%	YES
Kansas G&E Company	ER83-628	Suspended	1,865,224	6.0%	YES
New England Power Company	ER83-647	Suspended	50,926,000	6.0%	NO
Niagara Mo. Pwr. Corp.	ER83-652	Suspended 1/	410,000	6.5%	NO
Wisconsin P.S. Corp.	ER83-655	Suspended	406,000	0.8%	YES
Kentucky Util. Co.	ER83-656	Suspended 2/	3,383,120	4.9%	YES
West Texas Util. Co.	ER83-694	Suspended	1,969,331	2.9%	YES
Carol. Pwr. & Lt. Co.	ER83-765	Suspended	11,979,707	6.0%	YES
Montaup Elec. Co.	ER84-55	Suspended	11,300,000	6.0%	NO
Canal Elec. Co.	ER84-74	Suspended	14,251,487	N/A 3/	NO
So. Calif. Ed. Co.	ER84-75	Suspended	10,552,000	4.72%	YES
Ill. Power Co.	ER84-184	Uncontested Rate 4/	593,914	5.68%	NO
El Paso Elec. Co.	ER84-236	Suspended	361,965	3.4%	YES
Miss. Pwr. & Lt. Co.	ER84-276	Suspended	473,000	2.8%	YES
Florida Power & Lt. Co.	ER84-379	Suspended	2,915,000	2.5%	YES
Southwestern Electric	ER84-449	Uncontested Rate Pending Action	185,828	3.4%	NO
Colorado PSC	ER84-472	Pending Action Agenda of 7/18/84	584,000	1.0%	NO
Arizona PSC	ER84-480	Pending Action Agenda of 6/28/84	4,386,000	6.0%	YES

1/ The Commission disallowed inclusion of CWIP in rate base in excess of the 6 percent rate impact limitation in Order NO. 298. The elimination of the excess CWIP shall be reflected in the compliance rates at the conclusion of the proceeding.

2/ The Commission disallowed inclusion of CWIP in rate base in excess of the 50 percent of CWIP limitation in Order No. 298.

3/ This filing is a new service rate. The 6 percent rate impact limitation under Order 298 is not applicable.

4/ Neither the wholesale customers nor the Commission's staff disputed this rate filing and the rates were made effective.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D C 20426

OFFICE OF THE CHAIRMAN

Honorable J. Bennett Johnston
Subcommittee on Energy Regulation
Committee on Energy and Natural
Resources
United States Senate
Washington, D. C. 20510

Dear Senator Johnston:

Enclosed are responses to the additional questions you have asked following up on the hearings on the inclusion in rate base of the costs of Construction Work in Progress (CWIP).

If I may be of further assistance, please let me know.

Sincerely,

Raymond J. O'Connor

Raymond J. O'Connor
Chairman

Enclosure

cc: Honorable James A. McClure
Chairman, Committee on Energy
and Natural Resources

JAMES A. McCLURE, IDAHO, CHAIRMAN

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CHARLES A. TRABANDT, CHIEF COUNSEL
D. MICHAEL HARVEY, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C. 20510

May 4, 1984

Mr. Alex Radin
Executive Director
American Public Power Association
2301 M Street N.W.
Washington, D.C. 20037

Dear Mr. Radin:

The attached questions are in follow-up to your appearance before the Energy Regulation Subcommittee's April 12, 1984, hearing on S. 817, S. 1069 and H.R. 555.

Please provide the Subcommittee with your responses to these questions by the close of business May 18, 1984.

Sincerely,

Frank H. Murkowski
Chairman

FHM:HU:bn

QUESTIONS FROM VARIOUS REPUBLICAN MEMBERS OF THE SUBCOMMITTEE FOR MR. ALEX RADIN

1) To date there have been 15 CWIP applications to FERC totaling $118 million which would be less than a 1/10 of one percent increase in electricity prices if all are granted in full.

Q. Is it not true that numerous other factors, such as fuel costs, have far more effect on electricity rates than whether or not FERC grants any or all of the currently pending CWIP applications? Moreover, is it not true that the the costs which may be passed on pursuant to Order 298 would be passed on in any case? Thus, the principal difference between CWIP and no-CWIP in rate base is with respect to when costs will be recovered, not whether theywill be recovered.

2) On page 3 of your written testimony you state that "Municipal utilities and others whose wholesale power costs are regulated by FERC are automatically being charged the cost of CWIP...."

Q. Is that an accurate statement? Is it not correct that Order 298 only authorizes utilities to file for inclusion in rate base of up to 50% of CWIP, that the inclusion is not automatic, and that it is subject to a review of prudence? Moreover, is it not true that FERC has yet to grant any CWIP in rate base under order 298?

3) On page 2 of your written testimony you state that Order 298 creates a fundamental shift in the risk of construction of plants from shareholders to consumers. However, on pages 12 and 13 of FERC Chairman O'Connor's testimony he states that the rule does not change the Commission's policy regarding treatment of abandoned projects.

Q. How do you resolve the apparent differences between your statement and his?

4) You state on page 2 of your written testimony that the FERC rule was a radical departure from traditional ratemaking practice and that state utility commissions have consistently been guided by the principle that consumers should only be charged for plants which are used and useful.

Q. How many State utility commissions currently allow some CWIP in rate base?

5) You note on page 5 of your written testimony that the FERC rule will make it harder for the wholsale customer to provide their own bulk power supply in the future.

Q. Dosen't that misinterpret the FERC rule? In its October 4, 1983 order granting in part and denying in part applications for rehearing of Order 298 the Commission stated that:

> "Accordingly, we allow wholesale customers to escape liability for CWIP if they can prove that they bear no responsibility for the decision to build a new plant and will, in fact, purchase no full or partial firm power requirements which involve the new plant." (p. 9)

AMERICAN PUBLIC POWER ASSOCIATION

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Atlanta, Georgia
WILLIAM C. WALBRIDGE
Seminole Electric Cooperative
Tampa, Florida
ROBERT C. YOUNG
Burlington, Vermont

May 18, 1984

The Honorable Frank H. Murkowski
Chairman
Subcommittee on Energy Regulation
306 Dirksen Senate Office Building
Washington, D. C. 20510

Dear Senator Murkowski:

In response to your letter of May 4, 1984, I am enclosing responses to the questions you have submitted. Please advise me if there is additional information I can provide.

Sincerely,

Alex Radin
Executive Director

AR/mb

Enclosure

1) To date there have been 15 CWIP applications to FERC totaling $118 million which would be less than 1/10 of one percent increase in electricity prices if all are granted in full.

Question: Is it not true that numerous other factors, such as fuel costs, have far more effect on electricity rates than whether or not FERC grants any or all of the currently pending CWIP applications? Moreover, is it not true that the costs which may be passed on pursuant to Order 298 would be passed on in any case? Thus, the principal difference between CWIP and no-CWIP in rate base is with respect to when costs will be recovered, not whether they will be recovered.

Answer:

The premise to this question is grossly misleading if not a non sequitor. The 15 CWIP applications to date may have a relatively small impact on electric rates nationally, but that is small comfort to the wholesale customers of those utilities which are being charged CWIP. In fact, the introductory statement perhaps dramatizes the problem represented by the current FERC rule on CWIP. Wholesale power costs represent as much as 100 percent of the power supply costs of such customers, but in most cases revenues from wholesale sales constitute only a relatively small portion of the total revenues of the suppliers. Thus, in the vast majority of cases, CWIP will adversely affect wholesale power costs of the municipal and cooperative purchasers, but allowance of such costs in wholesale rates will only have a relatively minor impact on the financial condition of the utilities supplying wholesale power.

In response to the two parts of the question:

a) According to an Energy Information Administration report, Projected Costs of Electricity from Nuclear and Coal-Fired Power Plants, dated November 1982, there are three primary factors which affect electricity rates -- operation and maintenance costs, fuel prices and capital costs. Of these three, operations and maintenance costs are a relatively small percentage. Fuel costs for new coal-fired plants are significant, averaging one-third to one-half of a customer's electric bill. In contrast, the fuel costs for nuclear plants are very low. Regardless of the type of plant, however, these costs are not incurred until the plant is in operation. Capital costs, both actual construction expenditures (ie., labor and materials) and financing charges (ie., interest and dividends), are high for a coal-fired plant and significantly more for nuclear plants.

The Federal Energy Regulatory Commission (FERC) recognized the substantial impact of immediately including a private utility's financing costs in wholesale rate base at the time Order No. 298 was issued. In this situation, FERC acknowledged that CWIP could raise wholesale rates as much as 17 percent for certain customers. Therefore, the Commission limited rate increases attributable to CWIP to 6 percent for the first two years from the effective date of the rule, July 1, 1983. Since that date, New England Electric System alone has applied for $50 million in CWIP, hardly an insignificant sum for its wholesale customers to bear. In short, the financing charges represented by CWIP can be an important factor in the determination of wholesale electric rates.

b) Yes, wholesale customers pay their share of the financing costs incurred in constructing new generating plants. The real issue, as the question suggests, focuses on the timing and financial impact of those payments. Under FERC Order No. 298, wholesale customers pay those costs now, rather than when a facility goes into service under the ratemaking practice of allowance for funds used during construction (AFUDC). The Commission evaluated the cost to consumers of allowing CWIP and concluded:

> Under plausible assumptions of future demand growth and inflation, CWIP-based rates may remain somewhat higher than AFUDC-based rates for the forseeable future. (Order No. 298 at p. 106).

The testimony of J. Bertram Soloman of Southern Engineering Co. confirmed this finding by showing that, when the time value of money to consumers is recognized, inclusion of 50 percent CWIP in rate base is more costly to consumers over the entire construction period and service life of facilities.

2) On page 3 of your written testimony you state that "Municipal utilities and others whose wholesale power costs are regulated by FERC are automatically being charged the cost of CWIP...."

Question: Is that an accurate statement? Is it not correct that Order 298 only authorizes utilities to file for inclusion in rate base of up to 50% of CWIP, that the inclusion is not automatic, and that it is subject to a review of prudence? Moreover, is it not true that FERC has yet to grant any CWIP in rate base under order 298?

Answer:

a) Yes, the FERC rule is automatic to the extent that an investor owned utility is entitled to begin immediately charging for CWIP once the suspension period ends.

b) No. Under FERC Order No. 298, a private utility may apply for 100 percent CWIP for installation of pollution control facilities and conversion of oil- or gas-fired plants to other fuels. In addition, a private utility may collect 50 percent CWIP for all other facilities, regardless of its financial health.

As for the issue of prudency, this is an ill-defined term. In certain limited instances, the Commission has evaluated prudency issues raised by intervenors, but only in very rare cases has it actually penalized a private electric utility for an imprudent management decision. FERC has never penalized an electric utility because its construction program is inconsistent with a least-cost energy plan, nor, more importantly, does it have such authority under the explicit language of its rule. Assuming for argument's sake that FERC did have such authority, it is unlikely the Commission would make such a finding because it only has limited jurisdiction over a private utility's operations and, in most instances, state commissions will have already determined whether a company should proceed with the construction of a plant.

Finally, FERC fails to meet its objective of evaluating prudency prior to initiation of construction of a plant by a private utility. Since an investor owned utility is entitled to collect CWIP subject to refund, and litigation of prudency issues may take several years to resolve in the commission and courts, a company could invest millions of dollars in a new generating plant and initiate construction of such a facility before the final disposition of this issue. At that point, as one federal court of appeals has suggested, refunds would be a hollow remedy to correct this problem.

c) Under FERC Order No. 298, the following private electric utilities are collecting 50 percent CWIP subject to refund:

Utility	CWIP Revenues ($000)	% Increase Attributable to CWIP	Date Suspension Ended
Canal Electric Co.	$14,251	No limit 1/	1/9/84
Carolina Power & Light Co.	12,700	6.0	11/27/83
Illinois Power Co.	108	6.0	1/1/84
Kansas Gas & Electric Co.	1,592	6.0	2/29/84
Kentucky Utilities Co.	3,600	5.21	10/2/83
Montaup Electric Co.	12,162	6.0	12/28/83
New England Power Co.	50,900	6.0	1/1/84
Niagara Mohawk Power Corp.	461	6.0	3/31/84
Southwestern Electric Power Co.	239	5.95	3/12/84
Virginia Electric & Power Co.	9,161	3.8	1/1/84
Wisconsin Public Service Corp.	460	0.9	10/2/83

1/ Initial rate filings are exempted from the 6 percent cap.

3) On page 2 of your written testimony you state that Order 298 creates a fundamental shift in the risk of construction of plants from shareholders to consumers. However, on page 12 and 13 of FERC Chairman O'Connor's testimony he states that the rule does not change the Commission's policy regarding treatment of abandoned projects.

Question: How do you resolve the apparent differences between your statement and his?

Answer:

Under FERC Opinion No. 134, a private electric utility may recover from wholesale customers the costs incurred in constructing a new generating plant which is subsequently abandoned. Within the context of the CWIP rule, FERC acknowledged that this may create an unacceptable shifting of the risk of constructing new power plants from investors to ratepayers:

> (I)t appears that including CWIP in rate base would also reduce utilities' financing costs....(I)t may reduce the risk borne by shareholders with respect to noncompletion or abandonment of plant. Under the Commission's policy...,...inclusion of CWIP should have relatively little effect on this risk. Without CWIP, investors would bear a fraction of the direct cost of the failed project plus a fraction of any associated capitalized AFUDC; inclusion of CWIP would affect only the latter. Further, a reduction in this risk of failure may be achieved principally by shifting this risk from investors to ratepayers, and any resulting saving in capital costs is therefore a mixed blessing from the latter's standpoint. (FERC Order No. 298, ft. 20) (emphasis supplied.) (cites ommitted.)

4) You state on page 2 of your written testimony that the FERC rule was a radical departure from traditional ratemaking practice and that state utility commissions have consistently been guided by the principle that consumers should only be charged for plants which are used and useful.

Question: How many State utility commissions currently allow some CWIP in rate base?

Answer:

According to Energy Daily, April 12, 1984, 15 states, or nearly one-third of them, prohibit CWIP in retail rates. In addition, careful examination of an Edison Electric Institute document, "State Commission Policy on Construction Work in Progress," dated April 1984, reveals that no state allows CWIP on an automatic, arbitrary, fixed percentage basis. Instead, many states treat CWIP on a case-by-case determination of utility financial need and evaluate a number of factors in making a finding that extraordinary rate relief is warranted. This is the approach embodied in S. 1069 and H.R. 555 and the one advocated by APPA. Alternatively, some states allow CWIP with an AFUDC offset; that is, what they give in one hand, they take away in the other. Finally, the clear trend at the state level, as evidenced by actions of the last year, is to severely restrict or prohibit CWIP in retail rates. Among the states taking such actions are Texas, Illinois, Connecticut, Washington and Idaho.

5) You note on page 5 of your written testimony that the FERC rule will make it harder for the wholesale customer to provide their own bulk power supply in the future.

Question: Doesn't that misinterpret the FERC rule? In its October 4, 1983 order granting in part and denying in part applications for rehearing of Order 298 the Commission stated that:

> "Accordingly, we allow wholesale customers to escape liability for CWIP if they can prove that they bear no responsibility for the decision to build a new plant and will, in fact, purchase no full or partial firm power requirements which involve the new plant." (p.9)

Answer:

As APPA indicated in its testimony, the first part of FERC's two-pronged test does not impede wholesale customers from becoming energy self-sufficient. Under this part, wholesale customers must show that they are leaving a supplier and will not receive any power from the plant for which CWIP is being sought. In fact, APPA recommended that the language of H.R. 555 embodying this requirement be incorporated into S. 1069. However, the second part of the test, requiring wholesale customers to show that their supplier did not consider their power needs in deciding whether to construct a plant, is virtually impossible to meet. As a practical matter, every supplier can be expected to indicate to the Commission that it did consider its wholesale customers' power needs in deciding to proceed with a plant and, therefore, such customers will be obligated to pay CWIP under the FERC rule.

JAMES A. McCLURE, IDAHO, CHAIRMAN
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United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C. 20510

May 4, 1984

Mr. Douglas C. Bauer
Senior Vice President
Economics and Finance
Edison Electric Institute
1111 19th Street, N.W.
Washington, D.C. 20036

Dear Mr. Bauer:

The attached questions are in follow-up to your appearance before the Energy Regulation Subcommittee's April 12, 1984, hearing on S. 817, S. 1069 and H.R. 555.

Please provide the Subcommittee with your responses to these questions by the close of business May 18, 1984.

Sincerely,

Frank H. Murkowski
Chairman

Enclosure
FHM:HU:bn

Questions of Senator James A. McClure

Legislative Hearing on S. 817, S. 1069 and H.R. 555

April 12, 1984

To the Edison Electric Institute:

1. The proponents of the pending CWIP bills point out that the current FERC rule represents a deviation from historical principles of utility ratemaking. The FERC has explained that the change is justified by major changes in the financial and economic conditions facing the electric utility industry. EEI in its testimony has described in general terms the decline in the industry's financial health.

   For the subjects listed below, please provide a comparison of the 1983 data (or most recent year available) to the comparable data for any year 15 to 20 years ago, relating to the investor-owned utility industry.

   a) plant construction costs per kw, as compared to the inflation rate and increases in retail electric rates;
   b) the cost of debt and equity capital;
   c) construction periods for baseload generating plants, with separate data for coal-fired and nuclear plants;
   d) the ratio of the common stock price to book value per share, together with an explanation of how utility financing is adversely affected when the market price falls below book value;
   e) electric utility bond ratings;
   f) interest coverage ratios, together with an explanation of how those ratios affect bond ratings; and
   g) the cash and non-cash components of net income.

2. It has been contended that in the recent past, the electric utility industry has experienced a marked improvement in its financial condition, and therefore, CWIP in the rate base is not needed. Please comment, using illustrative data, on the extent to which the industry's financial condition recently has improved. The data should be either industry-wide, or it should reflect a large sample of the industry.

3. The proponents of the pending CWIP bills claim that including CWIP in the rate base will transfer, from investor to ratepayer, the risk that a generating plant under construction will be abandoned before completion. Judging from recent news reports about the financing problems facing certain utilities attempting to complete nuclear plants, it would appear that CWIP in rate base could substantially reduce the risk of plant abandonment. Please provide a detailed comment.

4. A number of partially completed generating plants recently have been abandoned, or their continuing construction has been indefinitely postponed. How have state and federal regulatory authorities allocated the costs of those plants between ratepayers and investors?

5. To date, what is the cost of the cleanup of the Three Mile Island nuclear plant? To what extent have ratepayers in Pennsylvania and New Jersey shared in those costs?

6. Does the current FERC rule on CWIP provide utilities with an incentive, and the financial ability, to build plants that are not needed? What are the regulatory and financial constraints on building plants that are not needed?

7. EEI has testified that it is clear from a variety of studies that ratepayers pay less over the life of a generating plant if the utility is permitted to include CWIP in the rate base. Please describe the studies that were conducted, and illustrate your conclusion by providing comparative data for a typical utility that would commence construction in 1984 of a standard-sized coal-fired generating plant.

8. If a utility's bond ratings are downgraded, its cost of capital presumably will be increased. Please provide an illustrative example for a typical utility, estimating the dollar amount per year of the increased cost, based on a typical capital structure.

9. To what extent do other capital intensive industries, such as steel and automobiles, finance new production capacity by charging current customers the carrying charges on new plants?

10. How do federal, municipal, and cooperative utilities account for carrying charges on their construction investments in rates charged to current customers?

EDISON ELECTRIC INSTITUTE The association of electric companies

1111 19th Street, N.W.
Washington, D.C. 20036
Tel. (202) 828-7400

May 18, 1984

Honorable Frank H. Murkowski
Chairman, Subcommittee on Energy Regulation
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Chairman Murkowski:

I have enclosed responses of Edison Electric Institute (EEI) to the questions asked on behalf of the Energy and Natural Resources Committee and enclosed with your letter of May 4 to EEI. We have endeavored to respond to your questions as comprehensively as possible, and have enclosed with our responses extensive supplementary materials for the Committee's information.

The material enclosed herewith includes responses to all of the Committee's questions except 1(a) and 1(c). At my direction, the Statistics Department of my staff is currently researching these questions. The data needed to respond to them are extensive, and are not readily available. I will forward these two responses to you as soon as they are available.

EEI staff is available to answer any further questions which you, or other Committee members and staff, may have. Please feel free to call upon us.

Sincerely,

Douglas C. Bauer
Senior Vice President

DCB:mc
Enclosures

Questions of Senator James A. McClure

Legislative Hearing on S. 817, S. 1069 and H.R. 555

April 12, 1984

To the Edison Electric Institute:

1. The proponents of the pending CWIP bills point out that the current FERC rule represents a deviation from historical principles of utility ratemaking. The FERC has explained that the change is justified by major changes in the financial and economic conditions facing the electric utility industry. EEI in its testimony has described in general terms the decline in the industry's financial health.

   For the subjects listed below, please provide a comparison of the 1983 data (or most recent year available) to the comparable data for any year 15 to 20 years ago, relating to the investor-owned utility industry.

   a) plant construction costs per kw, as compared to the inflation rate and increases in retail electric rates;
   b) the cost of debt and equity capital;
   c) construction periods for baseload generating plants, with separate data for coal-fired and nuclear plants;
   d) the ratio of the common stock price to book value per share, together with an explanation of how utility financing is adversely affected when the market price falls below book value;
   e) electric utility bond ratings;
   f) interest coverage ratios, together with an explanation of how those ratios affect bond ratings; and
   g) the cash and non-cash components of net income.

2. It has been contended that in the recent past, the electric utility industry has experienced a marked improvement in its financial condition, and therefore, CWIP in the rate base is not needed. Please comment, using illustrative data, on the extent to which the industry's financial condition recently has improved. The data should be either industry-wide, or it should reflect a large sample of the industry.

3. The proponents of the pending CWIP bills claim that including CWIP in the rate base will transfer, from investor to ratepayer, the risk that a generating plant under construction will be abandoned before completion. Judging from recent news reports about the financing problems facing certain utilities attempting to complete nuclear plants, it would appear that CWIP in rate base could substantially reduce the risk of plant abandonment. Please provide a detailed comment.

4. A number of partially completed generating plants recently have been abandoned, or their continuing construction has been indefinitely postponed. How have state and federal regulatory authorities allocated the costs of those plants between ratepayers and investors?

5. To date, what is the cost of the cleanup of the Three Mile Island nuclear plant? To what extent have ratepayers in Pennsylvania and New Jersey shared in those costs?

6. Does the current FERC rule on CWIP provide utilities with an incentive, and the financial ability, to build plants that are not needed? What are the regulatory and financial constraints on building plants that are not needed?

7. EEI has testified that it is clear from a variety of studies that ratepayers pay less over the life of a generating plant if the utility is permitted to include CWIP in the rate base. Please describe the studies that were conducted, and illustrate your conclusion by providing comparative data for a typical utility that would commence construction in 1984 of a standard-sized coal-fired generating plant.

8. If a utility's bond ratings are downgraded, its cost of capital presumably will be increased. Please provide an illustrative example for a typical utility, estimating the dollar amount per year of the increased cost, based on a typical capital structure.

9. To what extent do other capital intensive industries, such as steel and automobiles, finance new production capacity by charging current customers the carrying charges on new plants?

10. How do federal, municipal, and cooperative utilities account for carrying charges on their construction investments in rates charged to current customers?

1.b) Please provide a comparison of the 1983 data (or most recent year available) to the comparable data for any year 15 to 20 years ago, relating to the investor-owned utility industry: the cost of debt and equity capital.

Return on equity (ROE) measures earnings return to the common stockholder for the investment in shares representing ownership of the company. If the ROE is not at the level that the market believes is appropriate for the risk involved, the common stock sells at a discount from its value existing on the books of the company.

Interest rates represent the cost of borrowing money. One component of interest rates compensates the lender for use of money while another component is charged to allow for the risk of the investment. Normally, ROE should be higher than debt for the same company during the same period. This was the case until 1980. As illustrated in the attached chart, in 1980, there was a dramatic reversal in this trend which continued into 1982. For example, interest rates on long-term debt issued during 1980 averaged 13.46 percent. The earned ROE during this same period was 11.4 percent. Thus equity, which has more risk than long-term debt issued during the period, had a risk discount of 2.06 percentage points below debt. In 1981, the average cost of debt exceeded the earned ROE by 3.6 percent. Normally, equity should have at least a three point risk premium over debt. Although there has been some recent improvement, the risk premium of equity over debt is still well below historic levels of the mid 60's and early 70's.

Comparison of Embedded Interest Rates, Average Yield On Newly Issued Bonds, and Percentage Return on Common Equity Investor-Owned Electric Utility Industry 1965-1982

Year	Long-Term Debt Average Embedded Interest Rate Percent	Average Interest Rate on New Long-Term Debt (Weighted) Percent	Earned Return on Average Common Equity Percent
1965	3.8%	4.61%	12.5%
1966	3.9	5.53	12.7
1967	4.1	6.07	12.8
1968	4.3	6.30	12.3
1969	4.6	7.98	12.2
1970	5.1	8.79	11.8
1971	5.5	7.72	11.7
1972	5.7	7.50	11.8
1973	6.0	7.91	11.5
1974	6.5	9.59	10.7
1975	6.9	9.97	11.2
1976	7.1	8.92	11.5
1977	7.3	8.43	11.5
1978	7.5	9.30	11.4
1979	7.8	10.85	11.2
1980	8.4	13.46	11.4
1981	9.3	16.40	12.6
1982	9.6	15.10	13.6
1983	9.8 (E)	12.90 (E)	14.5 (E)

E -- Estimated

1. d) Please provide a comparison of the 1983 data (or most recent year available) to the comparable data for any year 15 to 20 years ago, relating to the investor-owned utility industry: the ratio of the common stock price to book value per share, together with an explanation of how utility financing is adversely affected when the market price falls below book value.

Market-to-book ratio compares the market value or current price of a company's common stock to the accounting or book value per share, which is a measure of the investment in the company already made by equity investors. If the ratio is lower than one, it means that investors are not willing to pay a dollar for a dollar of book value of the equity already invested in the company. That is because that dollar will not earn the return required by the market. This is a measure of the market's estimate of the future prospects of the company. Hence, the investor is demanding, for various reasons, a higher return on equity or dividend return than currently is being achieved.

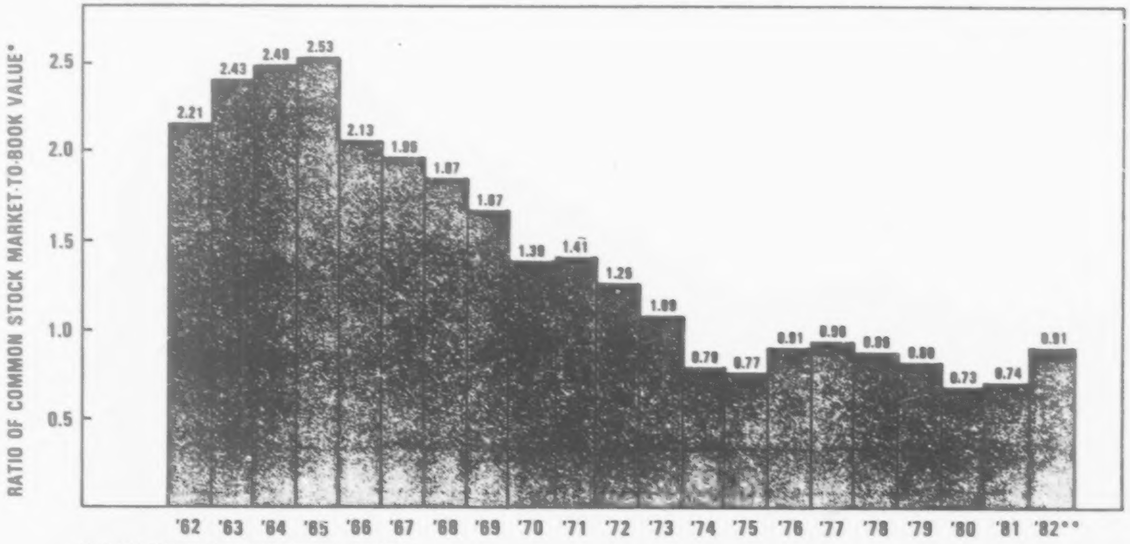
Any new issue of stock that is sold below book value dilutes the current stockholders' share of ownership. In effect, it confiscates a portion of the existing stockholders' investment. It also dilutes earnings per share and the growth in earnings per share since there is now a proportionately larger number of shares outstanding against which earnings per share are calculated. In addition, with a larger number of shares outstanding, it becomes even more difficult to meet the same cash dividend requirement. All of these factors have a negative impact on a utility's ability to raise new equity capital on reasonable terms.

Market-to-book ratios have declined substantially over the last two decades, as can be seen from the attached table, from a high of 2.53 in 1965 to a low of 0.73 in 1981. Since 1973, they have been continuously below 1.0. The tremendous bull market of the last two years has pulled electric utility stocks upwards along with other issues. Nevertheless, market-to-book ratios remained, even so, below 1.0. It averaged 0.94 in 1983, and has declined again to 0.89 (average through April, 1984).

Rate of return analysts routinely and universally recognize the need to provide a premium above book value in their analyses of the cost of equity capital so as to permit new issues to withstand market issuance pressures and costs without causing a sale below book value and, thereby, diluting the equity interest of existing shareholders. Such dilution discourages many investors from purchasing new equity issues, while adding a substantial new element of risk (with associated risk premiums) to the cost of new securities. By any reasonable measure, the deterioration in the utility industry's market-to-book ratio over the last 15 to 20 years has been severe.

FINANCIAL HEALTH . . . STOCK PRICES

THE STOCK MARKET HAS REACTED IN SIMILAR FASHION. DESPITE THE RECENT SURGE IN UTILITY COMMON STOCK PRICES, THE AVERAGE UTILITY STOCK CONTINUES TO SELL BELOW BOOK VALUE



*AVERAGE OF HIGH AND LOW VALUE FOR THE YEAR.

**AUGUST 1982.

SOURCE: UTILITY COMPUSTAT.

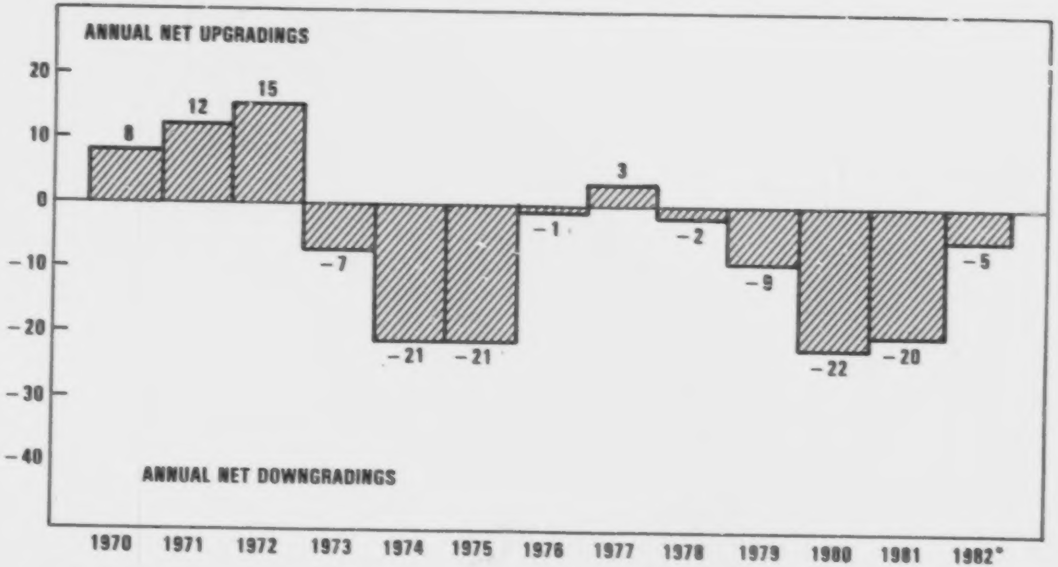
1.e) Please provide a comparison of the 1983 data (or most recent year available) to the comparable data for any year 15 to 20 years ago, relating to the investor-owned utility industry: electric utility bond ratings.

A "double A" rated utility mortgage bond, once the norm for the electric utility industry, is becoming increasingly scarce. Yet, such a rating is necessary if utilities are to have access to capital markets on reasonable terms over a sustained period. In 1970, for example, three-fifths of the industry was rated AA or better and only 10 utilities had below a "single A" rating. Today, many utilities are struggling to maintain a "single A" rating; and all too many bear the substantial long term cost penalty assessed by the market against BBB bonds (which are considered speculative). Many institutional investors -- an important source of capital investment -- will not purchase these lower-rated utility bonds. In 1983, despite recently improved performance, approximately one-third of Class A and B electric utilities were rated "triple B" or lower. Lower bond ratings translate directly into increased incremental cost of new debt capital and ultimately higher revenue requirements.

Downgradings are a sign of a weakened financial condition which results in the increased cost of borrowed money which eventually must be borne by the customers. The bond ratings of many electric utilities have been repeatedly reduced over the past decade. As shown in the attached figure, between 1972 and the first half of 1982, a net total of 105 utility bonds have been downgraded. In 1984, through May 5, there have been 19 downgradings and 13 upgradings. Continued downgradings, in today's financial markets, will continue to narrow availability of traditional capital markets to electric utilities and limit their ability to attract needed capital.

FINANCIAL HEALTH . . . BOND RATINGS

SINCE 1972, WALL STREET BOND RATING AGENCIES HAVE DOWNGRADED ELECTRIC UTILITY BOND RATINGS SIGNIFICANTLY. STANDARD AND POOR'S DOWNGRADED A NET TOTAL OF 20 UTILITY BONDS IN 1981, AND AN ADDITIONAL 5 IN THE FIRST HALF OF 1982



*FIRST HALF OF 1982.
SOURCE: STANDARD & POOR'S BOND GUIDE, 1969-1982.

1. f) Please provide a comparison of the 1983 data (or most recent year available) to the comparable data for any year 15 to 20 years ago, relating to the investor-owned utility industry: interest coverage ratios, together with an explanation of how those ratios affect bond ratings.

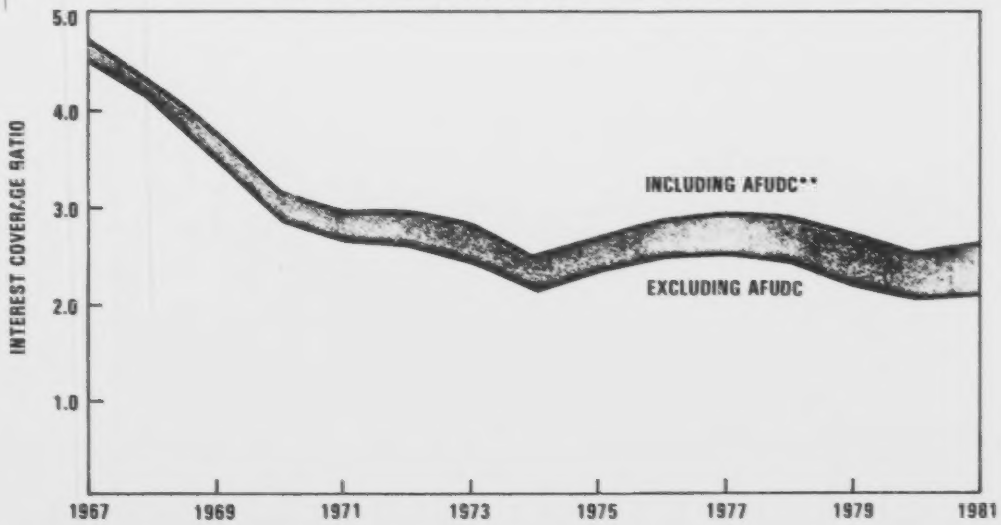
Interest coverage measures the ratio of net income before interest and dividends to interest payments. It is a measure of safety for the bondholder as to the security of interest payments. Bond rating agencies, which rate the investment characteristics of fixed income securities, use interest payment coverage as one of the major means of grading these securities. The lower the coverage, the greater the cost of borrowing money because there is a greater risk of default associated with a lower coverage of interest payments. Standard provisions in bond indentures forbid issuance of additional debt if pre-tax coverage ratios, including AFUDC, are below 2.0 times.

Pre-tax interest coverages (excluding AFUDC) have declined substantially from the 1967 ratio of 4.55 times to 2.54 times in 1977 and 2.09 times in 1981, as illustrated in the attached figure. In 1983, pre-tax interest coverages without AFUDC were 2.43 times. The 1977, 1981 and 1983 coverage ratios are substantially below the levels necessary if a utility is to have a "double A" bond rating, the desirable level to assure access to capital markets on reasonable terms over a sustained period.

FINANCIAL HEALTH . . . INTEREST COVERAGE

INTEREST COVERAGE RATIOS HELD STEADY IN 1981, BUT HAVE DECLINED DRAMATICALLY SINCE THE LATE 1960s.

AVERAGE ANNUAL PRE-TAX INTEREST COVERAGE*



*INTEREST COVERAGE = RATIO OF INCOME AVAILABLE FOR DEBT INTEREST PAYMENTS TO DOLLAR AMOUNT OF INTEREST CHARGES. IT PROVIDES A MEASURE OF LIQUIDITY AND SAFETY.

**AFUDC = ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION, AN ACCOUNTING ADJUSTMENT REFLECTING CAPITAL EXPENDITURES BEFORE PLANT IS PLACED IN SERVICE. IT PROVIDES NO CASH RETURN.

SOURCE: EDISON ELECTRIC INSTITUTE STATISTICAL YEARBOOK OF THE UTILITY INDUSTRY

1. g) Please provide a comparison of the 1983 data (or most recent year available) to the comparable data for any year 15 to 20 years ago, relating to the investor-owned utility industry: the cash and non-cash components of net income.

Accounting for Funds Used During Construction (AFUDC) is a non-cash element of income. In jurisdictions where CWIP is not allowed in rate base, fully or partially, a utility is not allowed to recover fully on a current basis the financing costs associated with new construction. However, to recognize these costs after the plant goes into service, allowance must be made to permit future recovery of those costs (although full recovery may not be allowed through future rate orders). This allowance is created by annually capitalizing the amount of AFUDC needed to account for these costs. These costs are taken into the plant account as an asset. Hence, once the plant goes into service, the utility then is allowed to recover today's financing costs, either wholly or partially, over the life of the asset as it is depreciated. Since current financing costs are recognized by this means for collection in the future, they do not add cash to a utility's current internal generation of funds (cash flow). With full inclusion of CWIP in rate base, financing costs can be realized as a current cash item and thereby contribute to current cash flow.

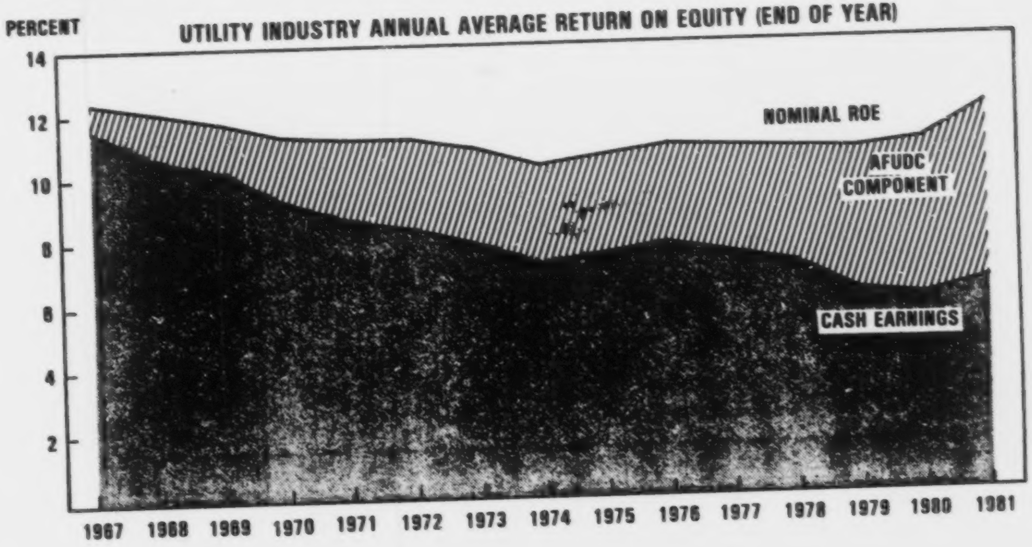
Because AFUDC is non-cash income, it detracts from the quality of earnings. The higher the percentage of AFUDC, the lower the quality of earnings. The effect of the lower quality of earnings attributable to substantial reliance upon AFUDC is to increase investors' preception of risk. Consequently, investors demand greater risk premiums, making both debt and equity capital more costly. Lower quality of earnings has broader implications: continued low levels of earnings have an adverse effect on coverage ratios which are further eroded as new debt capital is acquired; this results in further bond down-ratings, making debt capital more costly.

In 1967, approximately 10.0 percent of net income represented non-cash AFUDC earnings. AFUDC represented 55.1 percent of industry net income in 1983, an all-time high. As illustrated in the attached figure, in 1977 it was 37.42 percent and approximately 20.0 percent in 1970. Today, some electric utility companies are experiencing AFUDC in excess of 100 percent of net income. This deterioration in the quality of earnings increases capital costs and reduces capital availability thereby inhibiting future construction financing.

FINANCIAL HEALTH . . . QUALITY OF EARNINGS

THE QUALITY OF EARNINGS, AS DEFINED BY CASH AS A PROPORTION OF TOTAL EARNINGS, HAS DETERIORATED DRAMATICALLY OVER TIME. ALTHOUGH THIS MEASURE OF FINANCIAL PERFORMANCE RECOVERED SLIGHTLY IN 1981, AFUDC STILL ACCOUNTED FOR NEARLY HALF OF TOTAL EARNINGS

UTILITY INDUSTRY ANNUAL AVERAGE RETURN ON EQUITY (END OF YEAR)



SOURCE: EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE UTILITY INDUSTRY

2. It has been contended that in the recent past, the electric utility industry has experienced a marked improvement in its financial condition, and therefore, CWIP in the rate base is not needed. Please comment, using illustrative data, on the extent to which the industry's financial condition recently has improved. The data should be either industry-wide, or it should reflect a large sample of the industry.

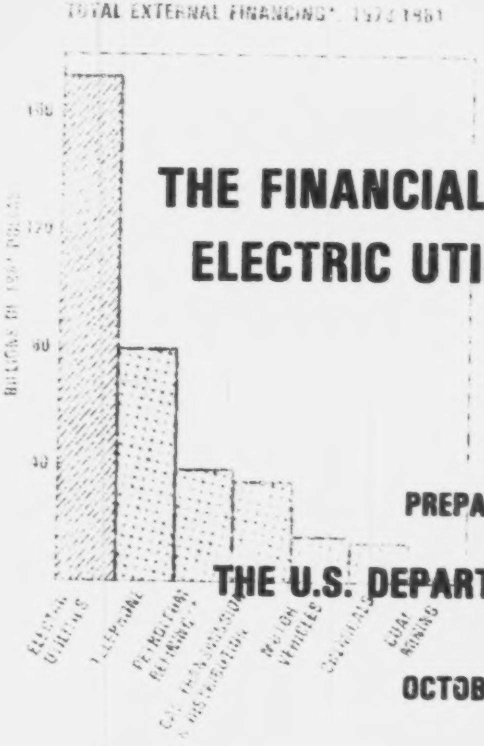
There is no single measure of industry financial health. Because of lower inflation and interest rates, there has been some recent improvement in several key financial indicators from the situation a few years ago, which had become almost desperate, with market values of many companies falling to 60-70 percent of book value. Much of the improvement, however, has been concentrated among utilities with small construction programs and therefore, the least amount of CWIP. Overall, the industry's financial condition still cannot be considered good, particularly when one examines the key financial parameters governing a utility's access to capital markets on reasonable terms.

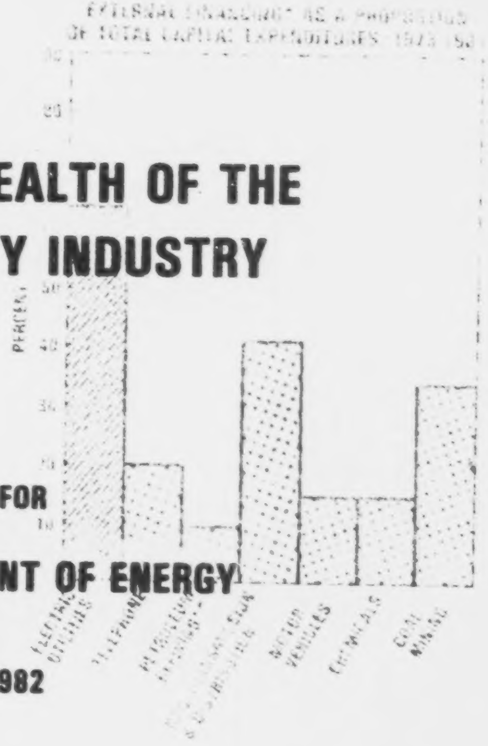
Bond ratings are an important measure of access to capital markets. The bond ratings of many electric utilities have been repeatedly reduced over the past decade. Many utilities are now rated BBB or below. A majority of institutional investors are not permitted to purchase utility debt securities rated below A.

The interest coverage ratio, the ratio of income to interest payments, is a principal determinant of bond ratings. It is markedly improved by the cash flow provided by CWIP. As was stated in our response to question 1.f, standard provisions in bond indentures forbid issuance of additional debt if coverage ratios, including AFUDC, are less than 2.0 times. In 1983, pre-tax interest coverages for the industry averaged 2.43 without AFUDC. Low interest coverage ratios have been a principal factor in the bond downgradings noted above. If CWIP were included in rate base and all AFUDC were converted to cash earnings, its interest coverage ratio would be increased to 3.03 and the cost of debt capital to utilities would be materially reduced.

New equity financing is also constrained when market prices of utility stock are at a discount from their book values. Notwithstanding a broad improvement in most sectors of the economy, the 1983 year-end market to book ratio was 0.94 on average, unchanged from 1982, according to an analysis of 100 major electric utility systems. FERC has noted the direct relationship between CWIP in rate base and the "quality of earnings measures" (i.e. the percentage of noncash AFUDC income in net income) used by investors in evaluating utility securities. In 1983, for example, noncash earnings increased to 55.1%, an all-time high. AFUDC has increased from 12.9 percent of net income in 1969, and has been above 40 percent of net income since 1979. Some electric utility companies are experiencing AFUDC in excess of 100 percent of net income. This deterioration in the quality of earnings inhibits future construction financing.

For the Committee's information, also enclosed are two DOE studies which provide a comprehensive discussion of the electric utility industry's financial health: The Financial Health of the Electric Utility Industry, dated October 1982 and A Comparison of the Electric Utility Industry with Other Major Business Sections, dated November 1982. Generally, these reports conclude that there is still significant room for improvement of the electric utility industry's financial health.





THE FINANCIAL HEALTH OF THE ELECTRIC UTILITY INDUSTRY

PREPARED FOR

THE U.S. DEPARTMENT OF ENERGY

OCTOBER 1982

BOOZ·ALLEN & HAMILTON INC.

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IF UTILITIES ARE UNABLE TO IMPROVE THEIR FINANCIAL HEALTH SIGNIFICIANTLY, CONSTRUCTION OUTLAYS WILL CONTINUE TO BE REDUCED, RESULTING IN LESS RELIABLE SERVICE AND LONG-TERM INCREASES IN ELECTRICITY RATES.

I. FINANCIAL HEALTH

FINANCIAL HEALTH . . . SUMMARY

I. A DETERIORATION IN UTILITY FINANCIAL HEALTH HAS CONSTRAINED THE INDUSTRY'S ACCESS TO THE CAPITAL MARKETS

- INTEREST COVERAGE RATIOS HELD STEADY IN 1981, BUT HAVE DECLINED DRAMATICALLY SINCE THE LATE 1960s
- ALTHOUGH THE INDUSTRY'S NOMINAL LEVEL OF PROFITABILITY HAS RECOVERED MODESTLY IN THE LAST YEAR, AVERAGE REAL RETURN ON EQUITY REMAINS WELL BELOW HISTORIC LEVELS
- THE QUALITY OF EARNINGS, AS DEFINED BY CASH AS A PROPORTION OF TOTAL EARNINGS, HAS DETERIORATED DRAMATICALLY OVER TIME. ALTHOUGH THIS MEASURE OF FINANCIAL PERFORMANCE RECOVERED SLIGHTLY IN 1981, AFUDC STILL ACCOUNTED FOR NEARLY HALF OF TOTAL EARNINGS.
- SINCE 1972, WALL STREET BOND RATING AGENCIES HAVE CONTINUALLY DOWNGRADED ELECTRIC UTILITY BOND RATINGS. STANDARD & POOR'S DOWNGRADED A NET TOTAL OF 20 UTILITY BONDS IN 1981, AND AN ADDITIONAL 5 IN THE FIRST HALF OF 1982
- AS A RESULT, MOST UTILITIES ARE NOW RATED A OR BELOW IN SPITE OF RECENTLY IMPROVED PERFORMANCE. SUSTAINED IMPROVEMENT WILL BE REQUIRED TO REVERSE THIS TREND
- THE STOCK MARKET HAS REACTED IN SIMILAR FASHION. DESPITE THE RECENT SURGE IN UTILITY COMMON STOCK PRICES, THE AVERAGE UTILITY STOCK CONTINUES TO SELL BELOW BOOK VALUE

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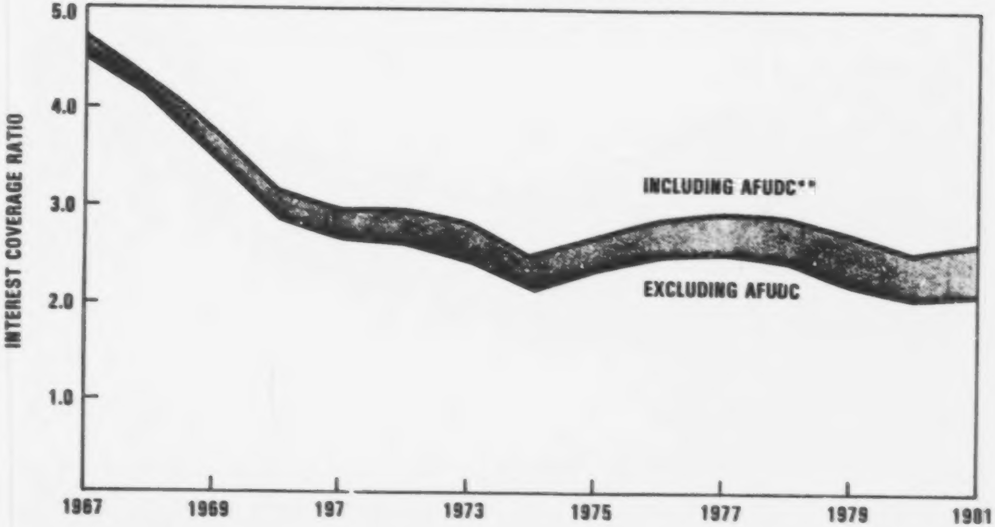

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SOURCE: EDISON ELECTRIC INSTITUTE STATISTICAL YEARBOOK OF THE UTILITY INDUSTRY

FINANCIAL HEALTH . . . EARNINGS

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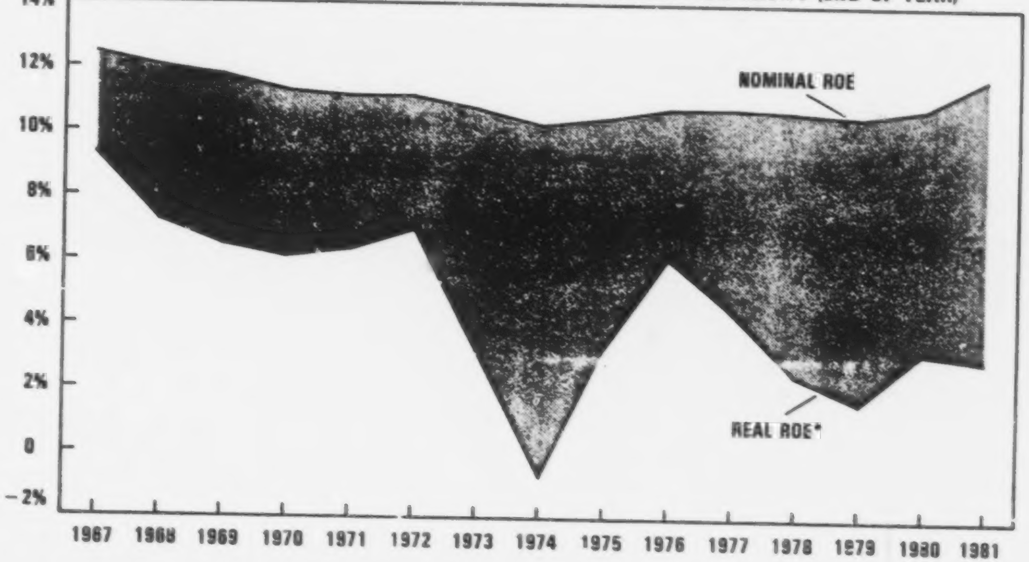

*NOMINAL ROE DEFLATED BY GNP IMPLICIT PRICE DEFLATOR (MEASURED AT FOURTH QUARTER ANNUALLY).
SOURCE: UTILITY COMPUSTAT; U.S. DEPARTMENT OF COMMERCE, SURVEY OF CURRENT BUSINESS.

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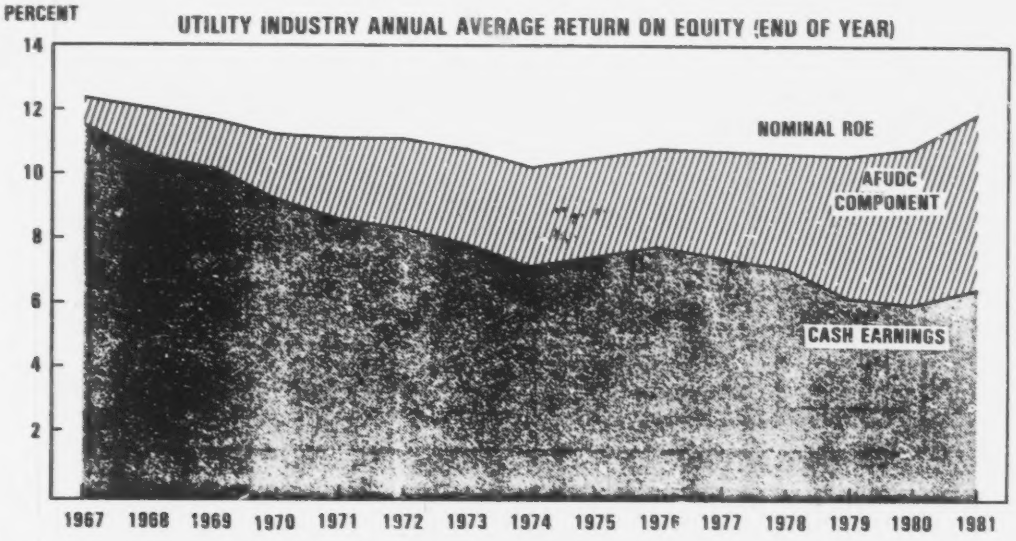
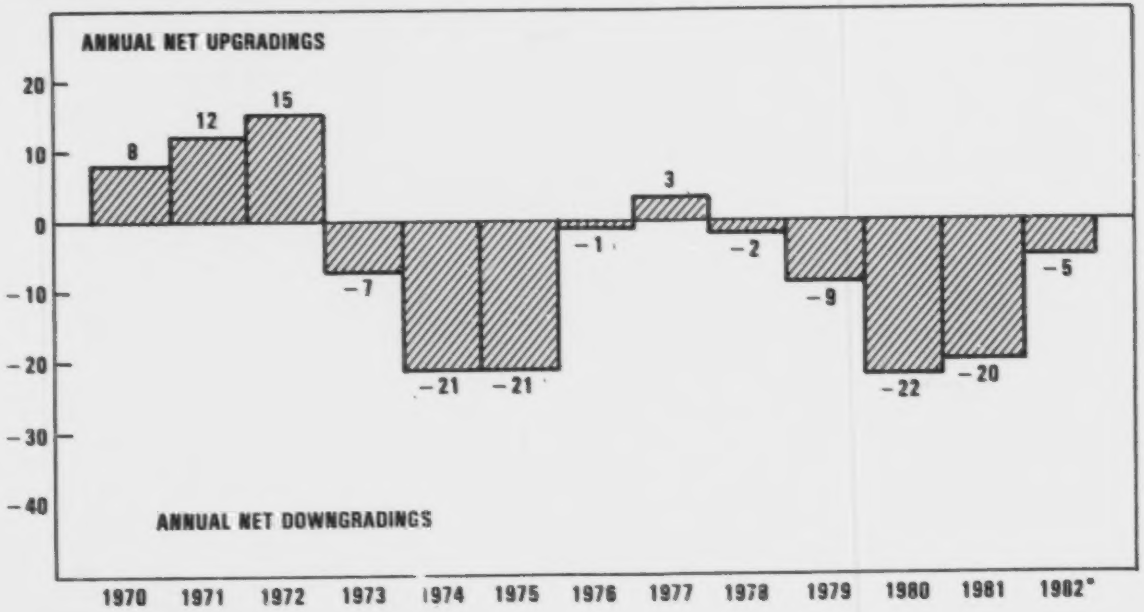

UTILITY INDUSTRY ANNUAL AVERAGE RETURN ON EQUITY (END OF YEAR)

SOURCE: EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE UTILITY INDUSTRY

FINANCIAL HEALTH . . . BOND RATINGS

SINCE 1972, WALL STREET BOND RATING AGENCIES HAVE DOWNGRADED ELECTRIC UTILITY BOND RATINGS SIGNIFICANTLY. STANDARD AND POOR'S DOWNGRADED A NET TOTAL OF 20 UTILITY BONDS IN 1981, AND AN ADDITIONAL 5 IN THE FIRST HALF OF 1982



*FIRST HALF OF 1982.
SOURCE: STANDARD & POOR'S BOND GUIDE, 1969-1982.

FINANCIAL HEALTH . . . BOND RATINGS

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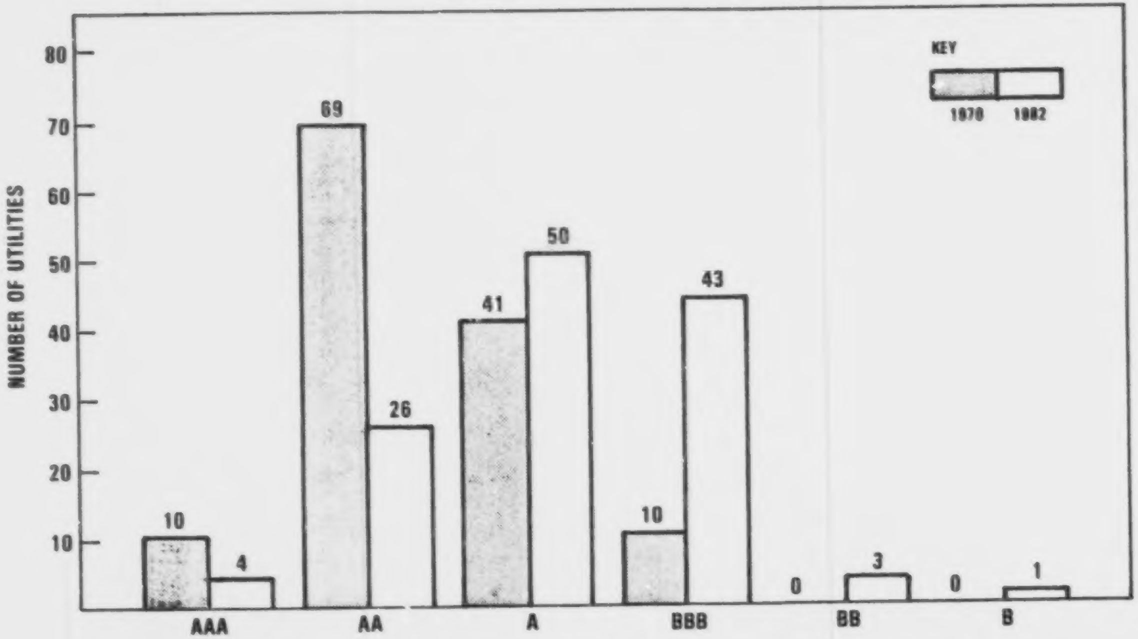
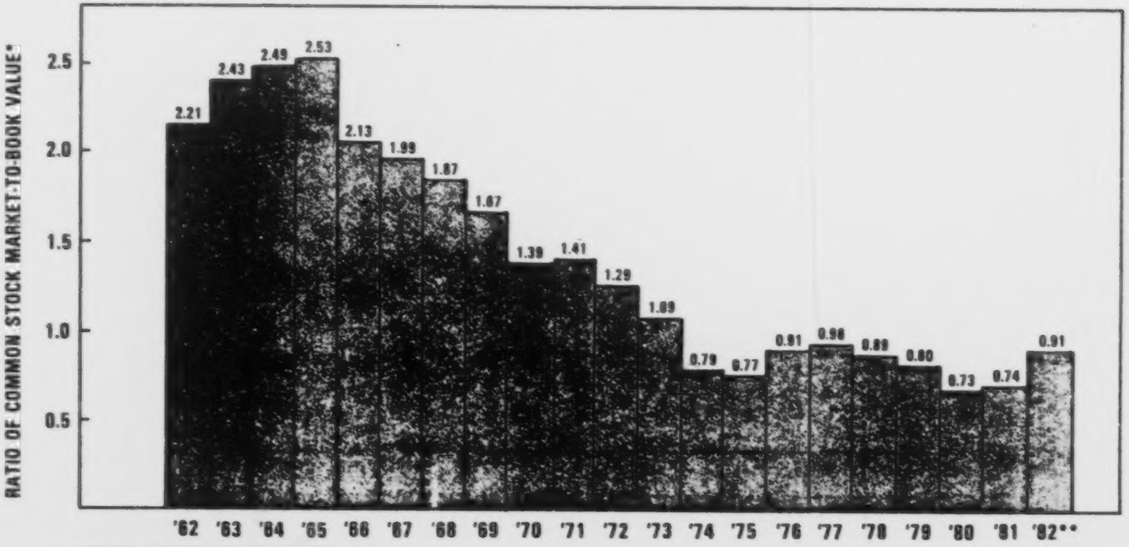


SOURCE: STANDARD AND POOR'S BOND GUIDE 130 UTILITIES RATED IN 1970, 127 IN 1982. THE LOSS OF THREE RATED UTILITIES WAS DUE TO CORPORATE REORGANIZATIONS.)

FINANCIAL HEALTH . . . STOCK PRICES

THE STOCK MARKET HAS REACTED IN SIMILAR FASHION. DESPITE THE RECENT SURGE IN UTILITY COMMON STOCK PRICES, THE AVERAGE UTILITY STOCK CONTINUES TO SELL BELOW BOOK VALUE



*AVERAGE OF HIGH AND LOW VALUE FOR THE YEAR.
**AUGUST 1982.
SOURCE: UTILITY COMPUSTAT.

II. CAPITAL ACCESS

CAPITAL ACCESS . . . SUMMARY

II. **CONSTRAINTS ON THE INDUSTRY'S ACCESS TO CAPITAL JEOPARDIZE ITS ABILITY TO MEET GROWING CAPACITY REQUIREMENTS**

- THE ELECTRIC UTILITY INDUSTRY IS AMONG THE MOST CAPITAL-INTENSIVE OF DOMESTIC INDUSTRIES

- TO A GREATER EXTENT THAN OTHER LARGE CAPITAL USERS, THE ELECTRIC UTILITY INDUSTRY IS DEPENDENT ON EXTERNALLY-GENERATED FUNDS TO FINANCE GROWTH

- ELECTRIC UTILITIES ARE LIKELY TO CONTINUE TO REQUIRE LARGE AMOUNTS OF CAPITAL. ANTICIPATED PEAK LOAD GROWTH OF 3% PER YEAR WILL REQUIRE UTILITY INDUSTRY EXPENDITURES OF APPROXIMATELY $267 BILLION* DURING THE NEXT DECADE

- DISPLACEMENT OF UNECONOMIC OIL AND GAS CAPACITY WOULD REQUIRE ADDITIONAL EXPENDITURES OF APPROXIMATELY $80 BILLION*

- ELECTRIC UTILITIES WILL NEED SECURE BOND RATINGS AND ATTRACTIVE STOCK PRICES IN ORDER TO RAISE THE EXTERNAL CAPITAL REQUIRED TO FUND THESE CONSTRUCTION PROGRAMS. SECURE BOND RATINGS ARE REQUIRED TO ATTRACT INSTITUTIONAL INVESTORS, WHILE STOCK PRICES ABOVE BOOK VALUE ARE REQUIRED TO PREVENT DILUTION OF EXISTING SHAREHOLDER EQUITY.

*FIGURES ARE IN 1981 DOLLARS

CAPITAL ACCESS . . . RELATIVE EXPENDITURES

THE ELECTRIC UTILITY INDUSTRY IS AMONG THE MOST CAPITAL-INTENSIVE OF DOMESTIC INDUSTRIES

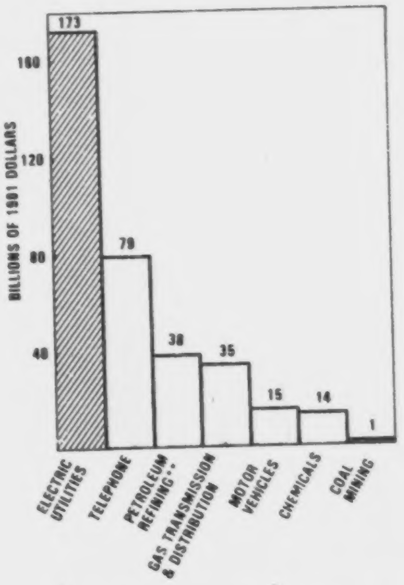
INDUSTRY	ASSETS/ REVENUES	CAPITAL EXPENDITURES/ REVENUES	1981 CAPITAL EXPENDITURES (BILLION $)
ELECTRIC UTILITIES	2.52	0.29	32.3
METAL MINING	2.34	0.21	1.8
TELEPHONE	2.27	0.32	46.5
CEMENT	1.44	0.19	0.8
RAIL TRANSPORT	1.39	0.14	9.1
NON-FERROUS METALS	1.18	0.15	3.2
COAL MINING	1.18	0.10	0.3
HOSPITALS	1.04	0.24	1.8
FARM MACHINERY	0.98	0.05	0.8
CHEMICALS	0.94	0.10	11.8
PHARMACEUTICALS	0.93	0.07	2.8
CONSTRUCTION & MINING EQUIPMENT	0.89	0.10	3.8
GAS TRANSMISSION & DISTRIBUTION	0.88	0.12	11.2
AIR TRANSPORT	0.84	0.14	5.6
IRON AND STEEL	0.83	0.07	5.7
ELECTRICAL MACHINERY	0.83	0.07	4.4
INSTRUMENTS	0.79	0.05	0.6
GLASS CONTAINERS	0.77	0.05	0.4
ENGINES & TURBINES	0.76	0.05	0.8
PETROLEUM REFINING*	0.67	0.10	69.3
RUBBER & PLASTICS	0.68	0.06	1.7
METAL CONTAINERS	0.66	0.06	0.8
SOAPS & TOILETRIES	0.64	0.04	1.4
MOTOR VEHICLES	0.62	0.09	15.1
AIRCRAFT & PARTS	0.60	0.05	2.4
TEXTILES	0.59	0.05	0.8
HOUSEHOLD APPLIANCES	0.58	0.03	0.4
PAINTS	0.58	0.04	0.2
TRUCKING	0.50	0.07	1.2

*INCLUDES EXPLORATION AND PRODUCTION & COMPANIES ENGAGED PRIMARILY IN REFINING.
SOURCE: COMPUSTAT

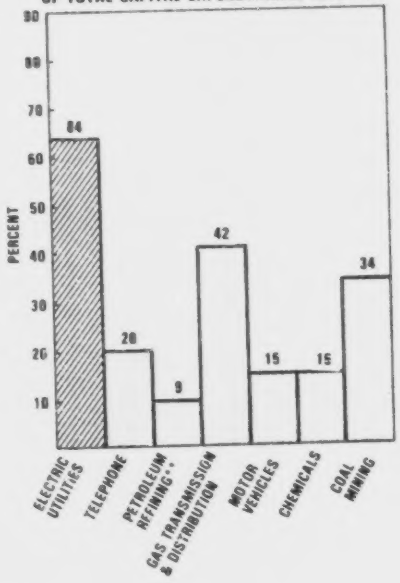
CAPITAL ACCESS . . . SOURCES

TO A GREATER EXTENT THAN OTHER LARGE CAPITAL USERS, THE ELECTRIC UTILITY INDUSTY IS DEPENDENT ON EXTERNALLY-GENERATED FUNDS TO FINANCE GROWTH

TOTAL EXTERNAL FINANCING*, 1973-1981



EXTERNAL FINANCING* AS A PROPORTION OF TOTAL CAPITAL EXPENDITURES, 1973-1981

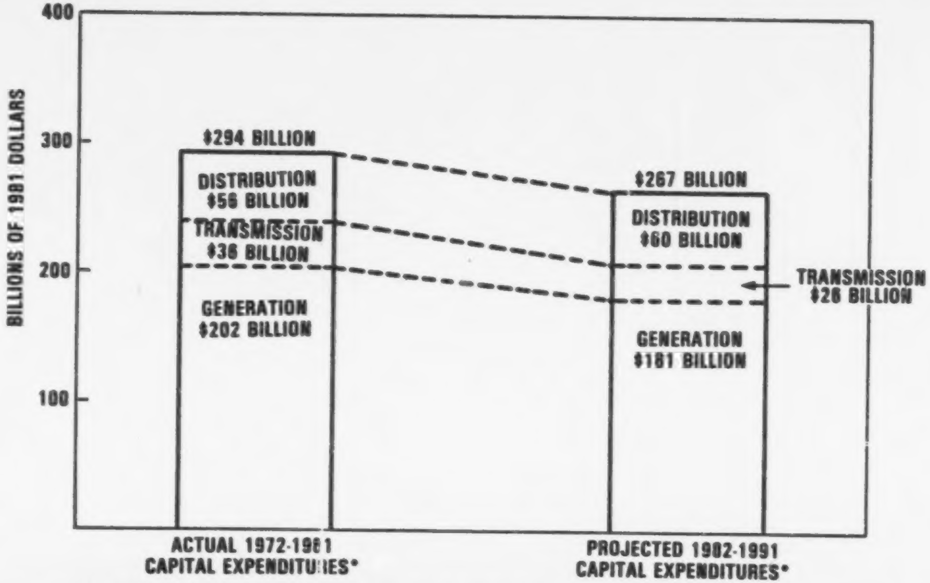


*NET OF DEBT RETIREMENTS
**INCLUDES EXPLORATION AND PRODUCTION BY COMPANIES PRIMARILY INVOLVED IN REFINING

SOURCE: COMPUSTAT

CAPITAL ACCESS . . . ANTICIPATED EXPENDITURES

ELECTRIC UTILITIES ARE LIKELY TO CONTINUE TO REQUIRE LARGE AMOUNTS OF CAPITAL. ANTICIPATED PEAK LOAD GROWTH OF 3% PER YEAR WILL REQUIRE UTILITY INDUSTRY EXPENDITURES OF APPROXIMATELY $267 BILLION* DURING THE NEXT DECADE

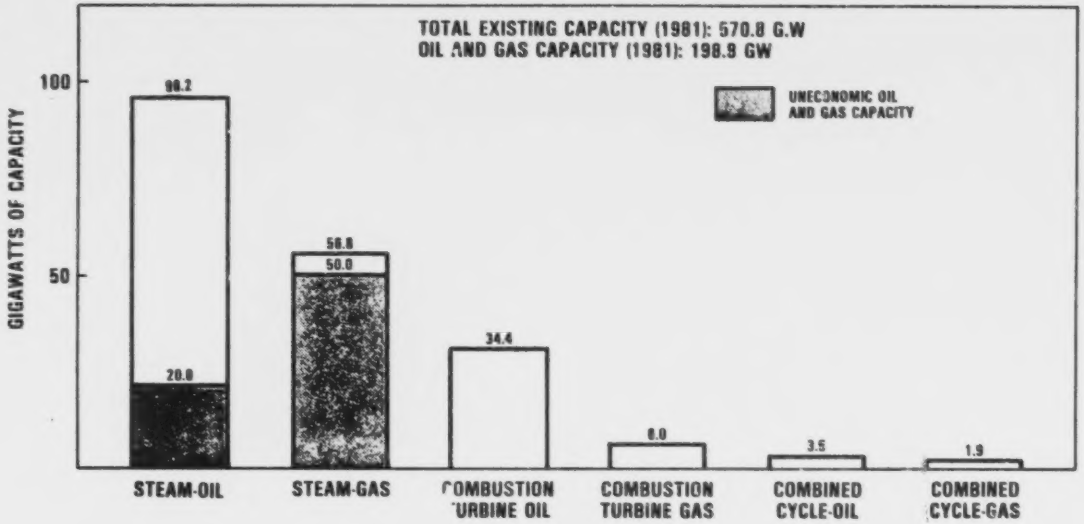


*1981 DOLLARS, FOR INVESTOR-OWNED UTILITIES ONLY (ESTIMATED AT 80% OF TOTAL UTILITY EXPENDITURES). IF AN INFLATION RATE OF 8% IS ASSUMED FOR THE 1982-1991 TIME PERIOD NOMINAL CONSTRUCTION EXPENDITURES WOULD APPROXIMATE $371 BILLION, COMPARED TO 1972-1981 NOMINAL CONSTRUCTION EXPENDITURES OF $195 BILLION.

SOURCE: NATIONAL ELECTRIC RELIABILITY COUNCIL, ELECTRIC POWER SUPPLY AND DEMAND, 1981-1990; ELECTRICAL WORLD, SEPTEMBER 1981.

CAPITAL ACCESS . . . ADDITIONAL EXPENDITURES

DISPLACEMENT OF UNECONOMIC OIL AND GAS CAPACITY WOULD REQUIRE ADDITIONAL EXPENDITURES OF APPROXIMATELY $80 BILLION*

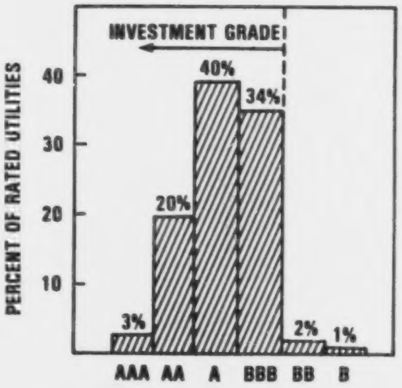


*1981 DOLLARS. ASSUMES OIL AND GAS-FIRED PLANT BECOMES UNECONOMIC WHEN OPERATED ABOVE A 50 PERCENT CAPACITY FACTOR. (SOURCE: EEI,ICF/DOE)

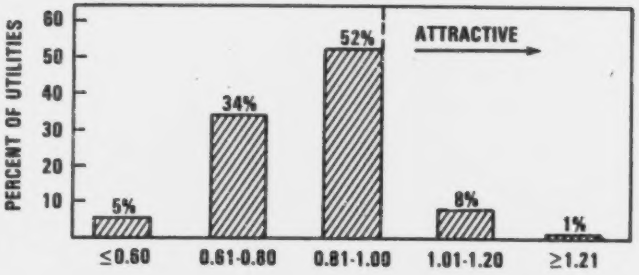
SOURCE: NATIONAL ELECTRIC RELIABILITY COUNCIL, ELECTRIC POWER SUPPLY AND DEMAND, 1981-1990, AND BOOZ, ALLEN & HAMILTON.

CAPITAL ACCESS . . . REQUIREMENTS

ELECTRIC UTILITIES WILL NEED SECURE BOND RATINGS AND ATTRACTIVE STOCK PRICES IN ORDER TO RAISE THE EXTERNAL CAPITAL REQUIRED TO FUND THESE CONSTRUCTION PROGRAMS. SECURE BOND RATINGS ARE REQUIRED TO ATTRACT INSTITUTIONAL INVESTORS, WHILE STOCK PRICES ABOVE BOOK VALUE ARE REQUIRED TO PREVENT DILUTION OF EXISTING SHAREHOLDER EQUITY



DISTRIBUTION OF ELECTRIC UTILITY BOND RATINGS (JUNE, 1982)



DISTRIBUTION OF ELECTRIC UTILITY RATIO OF MARKET TO BOOK VALUE (JULY, 1982)

SOURCE: STANDARD AND POOR'S BOND GUIDE, UTILITY COMPUSTAT

III. CAUSES OF DETERIORATION

CAUSES OF DETERIORATION . . . SUMMARY

III. ADVERSE ECONOMIC CONDITIONS AND INADEQUATE RATE RELIEF HAVE CAUSED THE DETERIORATION IN UTILITY FINANCIAL HEALTH

- ADVERSE ECONOMIC CONDITIONS HAVE CAUSED THE UTILITY INDUSTRY'S COST OF DOING BUSINESS TO INCREASE DRAMATICALLY

- IN RESPONSE TO THESE RISING COSTS, UTILITIES HAVE SOUGHT SUBSTANTIAL RATE INCREASES FROM PUBLIC UTILITY COMMISSIONS (PUC's). ELECTRICITY RATES HAVE INCREASED IN BOTH NOMINAL AND REAL TERMS IN RECENT YEARS

- PUC'S ARE REQUIRED TO ASSURE RELIABLE SERVICE OVER TIME WHILE PROVIDING UTILITIES WITH SUFFICIENT RETURNS TO ATTRACT CAPITAL. PUBLIC OFFICIALS AND CONSUMER GROUPS DIFFER FROM UTILITIES IN THEIR TIME HORIZON, AND EXERT SUBSTANTIAL INFLUENCE ON THE RATE MAKING PROCESS

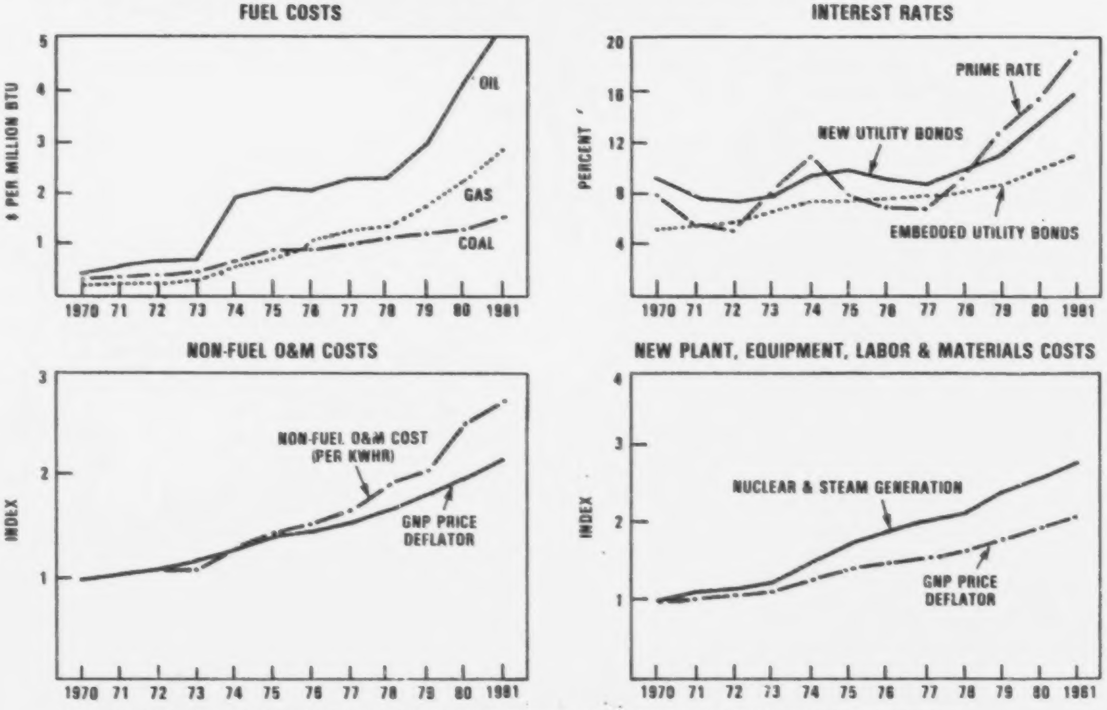
- SHARP INCREASES IN RAW ENERGY COSTS HAVE CAUSED UTILITIES TO BECOME MORE FUEL INTENSIVE AND LESS CAPITAL INTENSIVE. PUC'S HAVE ALLOWED UTILITIES TO RECOVER FUEL COST INCREASES VIA AUTOMATIC FUEL ADJUSTMENT CLAUSES

CAUSES OF DETERIORATION . . . SUMMARY

- BUT DESPITE REDUCED CAPITAL INTENSITY, UTILITY EARNINGS HAVE FALLEN BELOW BOTH COMMISSION AUTHORIZED RATES OF RETURN AND RETURNS EARNED BY OTHER INDUSTRIES. THE CASH COMPONENT OF EARNINGS HAS DETERIORATED EVEN FURTHER.
- UTILITY CASH EARNINGS HAVE DETERIORATED BECAUSE NEW PLANT COSTS MORE AND TAKES LONGER TO BUILD, RESULTING IN LARGE SUMS OF CAPITAL BEING TIED UP IN "CONSTRUCTION WORK IN PROGRESS." LITTLE OF THIS INVESTMENT EARNS A CASH RETURN.
- PUC'S HAVE RESPONDED TO CONFLICTING PRESSURES BY PROVIDING SIGNIFICANTLY LESS BASE RATE RELIEF THAN REQUESTED BY UTILITIES. THIS HAS CONTRIBUTED TO THE INDUSTRY'S FAILURE TO EARN ITS ALLOWED RETURN.
- RELATIVELY MODEST RATE INCREASES WOULD BE REQUIRED TO RESTORE UTILITY EARNINGS TO COMPETITIVE LEVELS. ELIMINATING THE DISTORTING EFFECTS OF CWIP AND AFUDC WOULD REQUIRE AN AVERAGE ONE-TIME RATE INCREASE OF 12.5 PERCENT.

CAUSES OF DETERIORATION . . . RISING COSTS

ADVERSE ECONOMIC CONDITIONS HAVE CAUSED THE UTILITY INDUSTRY'S COST OF DOING BUSINESS TO INCREASE DRAMATICALLY

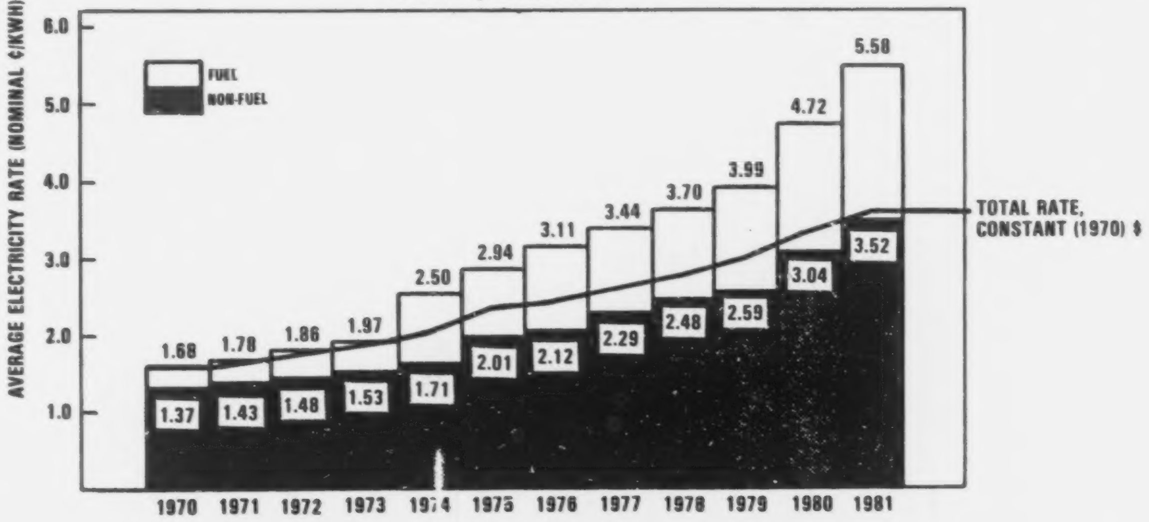


SOURCE: MOODY'S PUBLIC UTILITY MANUAL; HANDY WHITMAN INDEX OF PUBLIC UTILITY CONSTRUCTION COSTS; EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY.

CAUSES OF DETERIORATION . . . RATE RELIEF

IN RESPONSE TO THESE RISING COSTS, UTILITIES HAVE SOUGHT SUBSTANTIAL RATE INCREASES FROM PUBLIC UTILITY COMMISSIONS (PUC'S). ELECTRICITY RATES HAVE INCREASED IN BOTH NOMINAL AND REAL TERMS IN RECENT YEARS

ACTUAL ELECTRIC RATES*

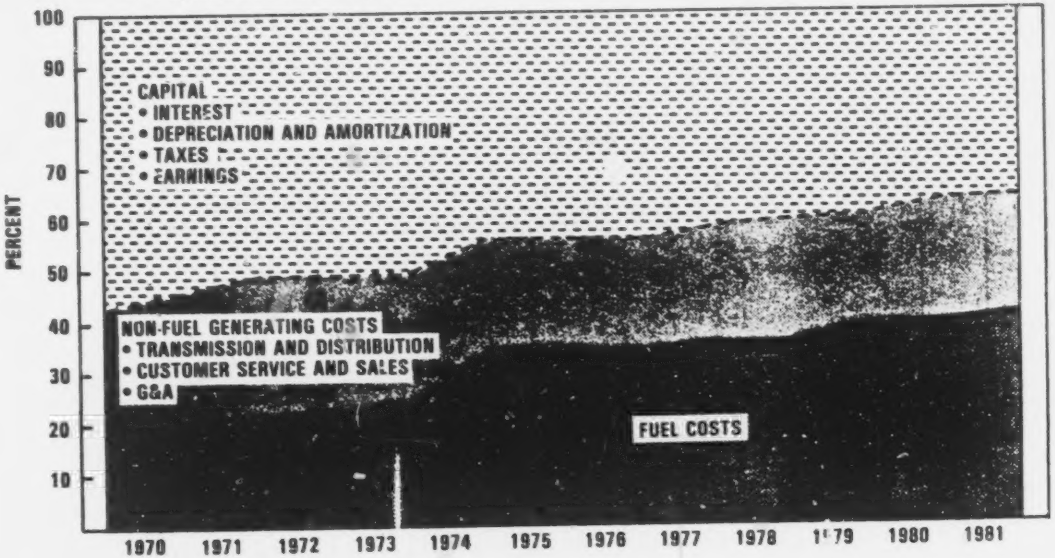


SOURCE: EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE UTILITY INDUSTRY, AND DOE, STATISTICS OF PRIVATELY OWNED UTILITIES.
*THE FUEL COMPONENT IS NORMALLY ACCOMMODATED BY AN AUTOMATIC FUEL ADJUSTMENT CLAUSE.

CAUSES OF DETERIORATION . . . FUEL VERSUS CAPITAL INTENSITY

SHARP INCREASES IN RAW ENERGY COSTS HAVE CAUSED UTILITIES TO BECOME MORE FUEL INTENSIVE AND LESS CAPITAL INTENSIVE. PUC'S HAVE ALLOWED UTILITIES TO RECOVER FUEL COST INCREASES VIA AUTOMATIC FUEL ADJUSTMENT CLAUSES

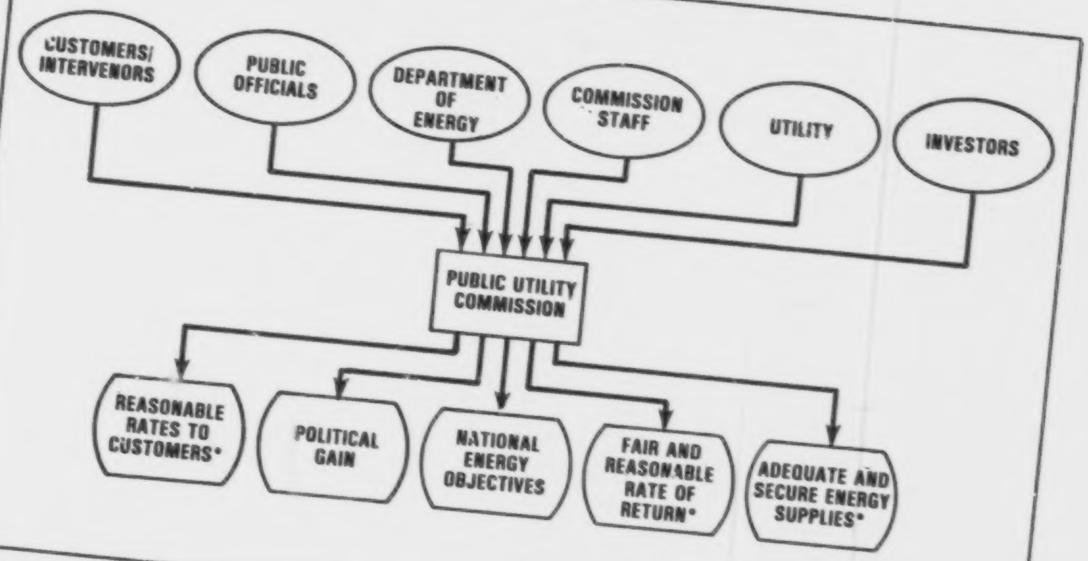
FUEL, NON-FUEL OPERATING EXPENSES, AND CAPITAL AS A PERCENTAGE OF REVENUES



SOURCE: U.S. ENERGY INFORMATION AGENCY, STATISTICS OF PRIVATELY OWNED ELECTRIC UTILITIES.

CAUSES OF DETERIORATION . . . RATE RELIEF

PUC'S ARE REQUIRED TO ASSURE RELIABLE SERVICE OVER TIME WHILE PROVIDING UTILITIES WITH A SUFFICIENT RETURN TO ATTRACT CAPITAL. PUBLIC OFFICIALS AND CONSUMER GROUPS DIFFER FROM UTILITIES IN THEIR TIME HORIZON, AND EXERT SUBSTANTIAL INFLUENCE ON THE RATEMAKING PROCESS

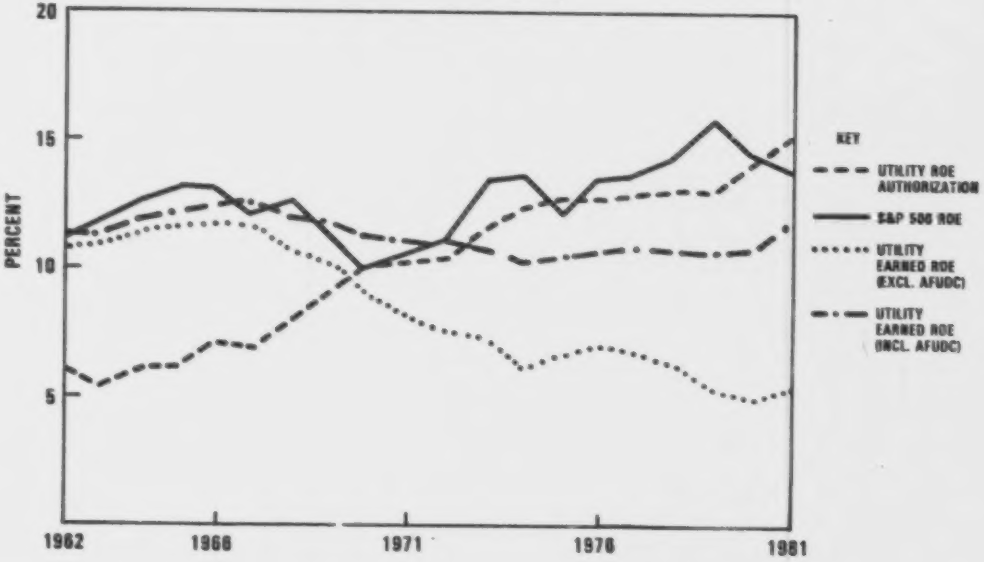

CUSTOMERS/ INTERVENORS
PUBLIC OFFICIALS
DEPARTMENT OF ENERGY
COMMISSION STAFF
UTILITY
INVESTORS
PUBLIC UTILITY COMMISSION
REASONABLE RATES TO CUSTOMERS*
POLITICAL GAIN
NATIONAL ENERGY OBJECTIVES
FAIR AND REASONABLE RATE OF RETURN*
ADEQUATE AND SECURE ENERGY SUPPLIES*

*LEGAL MANDATES GENERALLY WITHIN THE DIRECT PURVIEW OF PUBLIC UTILITY COMMISSIONS

CAUSES OF DETERIORATION . . . EARNINGS

BUT DESPITE REDUCED CAPITAL INTENSITY, UTILITY EARNINGS HAVE FALLEN BELOW BOTH COMMISSION AUTHORIZED RATES OF RETURN AND RETURNS EARNED BY OTHER INDUSTRIES. THE CASH COMPONENT OF EARNINGS HAS DETERIORATED EVEN FURTHER

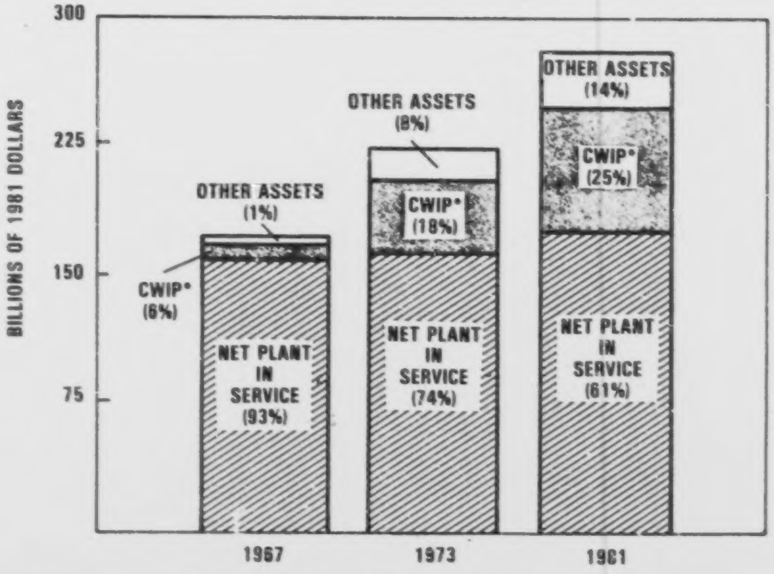
AVERAGE RETURN ON EQUITY



SOURCE: EDISON ELECTRIC INSTITUTE, FEDERAL ENERGY REGULATORY COMMISSION, FEDERAL RESERVE BOARD, AND COMPUSTAT.

CAUSES OF DETERIORATION . . . CWIP

UTILITY CASH EARNINGS HAVE DETERIORATED BECAUSE NEW PLANT COSTS MORE AND TAKES LONGER TO BUILD, RESULTING IN LARGE SUMS OF CAPITAL BEING TIED UP IN "CONSTRUCTION WORK IN PROGRESS." LITTLE OF THIS INVESTMENT EARNS A CASH RETURN.



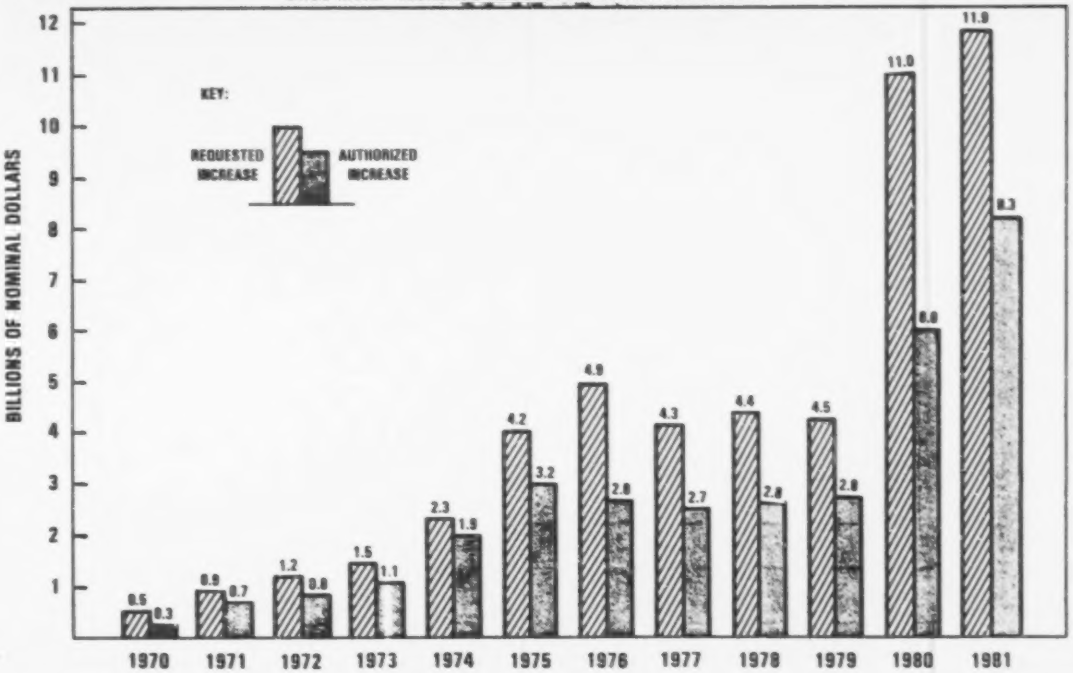
*CONSTRUCTION WORK IN PROGRESS (CWIP) REFERS TO PLANT BEING BUILT, BUT NOT YET IN SERVICE.

SOURCE: UTILITY COMPUSTAT, EEI, STATISTICAL YEARBOOK OF THE UTILITY INDUSTRY, AND EIA, STATISTICS OF PRIVATELY OWNED UTILITIES.

CAUSES OF DETERIORATION . . . BASE RATE RELIEF

PUC'S HAVE RESPONDED TO CONFLICTING PRESSURES BY PROVIDING SIGNIFICANTLY LESS BASE RATE RELIEF THAN REQUESTED BY UTILITIES. THIS HAS CONTRIBUTED TO THE INDUSTRY'S FAILURE TO EARN ITS ALLOWED RETURN

BASE RATE* INCREASE REQUESTS AND AUTHORIZATIONS

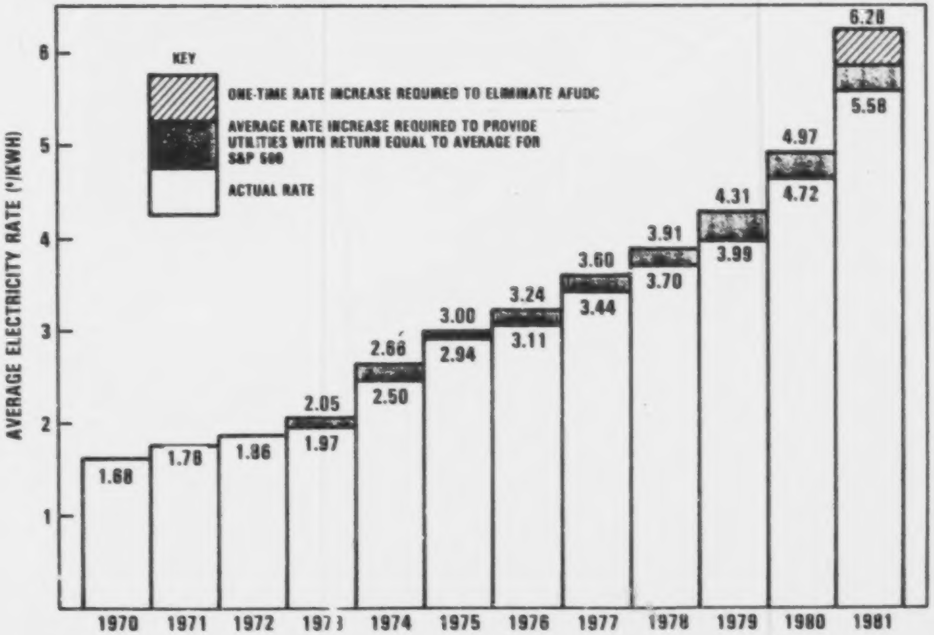


SOURCE: EDISON ELECTRIC INSTITUTE.

* EXCLUDES FUEL ADJUSTMENT.

CAUSES OF DETERIORATION . . . RESTORING EARNINGS

RELATIVELY MODEST RATE INCREASES WOULD BE REQUIRED TO RESTORE UTILITY EARNINGS TO COMPETITIVE LEVELS. ELIMINATING THE DISTORTING EFFECTS OF CWIP AND AFUDC WOULD REQUIRE AN AVERAGE ONE-TIME RATE INCREASE OF 12.5 PERCENT



SOURCE: EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY; BOOZ, ALLEN & HAMILTON INC.

IV. IMPLICATIONS

IMPLICATIONS . . . SUMMARY

IV. IF UTILITIES ARE UNABLE TO IMPROVE THEIR FINANCIAL HEALTH SIGNIFICANTLY, CONSTRUCTION OUTLAYS WILL CONTINUE TO BE REDUCED, RESULTING IN LESS RELIABLE SERVICE AND LONG-TERM INCREASES IN ELECTRICITY RATES

- UTILITIES HAVE SCALED BACK CONSTRUCTION PROGRAMS DRAMATICALLY IN RESPONSE TO DETERIORATING FINANCIAL CONDITIONS AND REDUCED DEMAND GROWTH. THE NET ORDERING RATE FOR NEW POWER PLANTS HAS BEEN ZERO OVER THE LAST EIGHT YEARS

- BECAUSE THEY REPRESENT OVER 90% OF GENERATING PLANT EITHER PLANNED OR UNDER CONSTRUCTION, CUTBACKS WILL RESULT IN DEFERRAL OR CANCELLATION OF NUCLEAR AND COAL-POWERED FACILITIES

- UTILITIES MUST MAKE SIGNIFICANT NEW CAPACITY COMMITMENTS IF RESERVE MARGINS AND SERVICE RELIABILITY ARE TO BE MAINTAINED

- IF NEW CAPACITY IS NOT FORTHCOMING, RESERVE MARGINS AND SERVICE RELIABILITY WILL ALMOST CERTAINLY DETERIORATE. THIS DETERIORATION WOULD BE ACCELERATED BY A STRONG ECONOMIC RECOVERY RESULTING IN HIGHER LOAD GROWTH

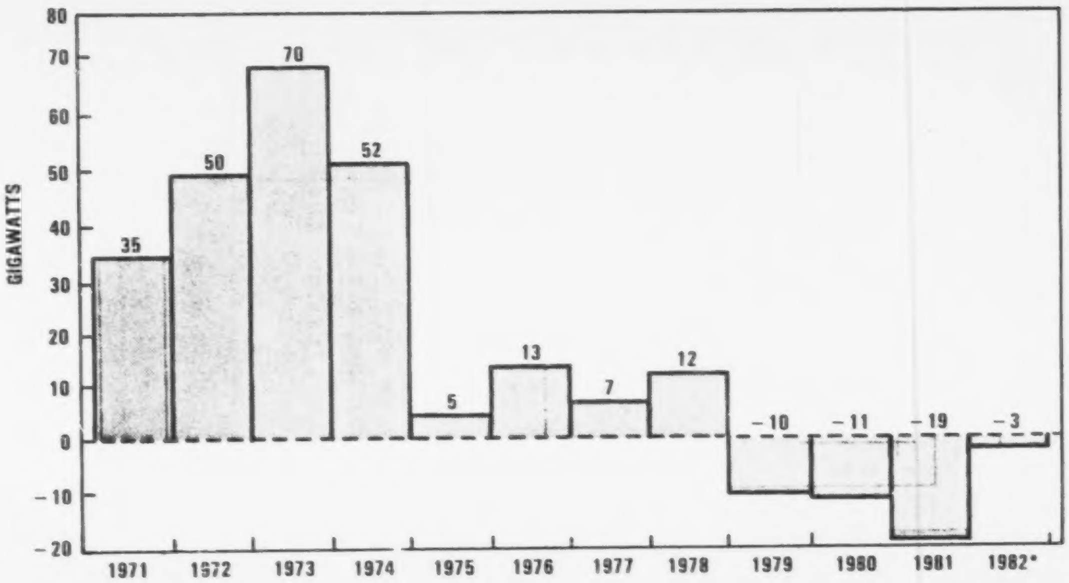
- IN THE NEAR-TERM, REPLACEMENT ENERGY WILL BE SUPPLIED BY INCREASING THE USE OF EXISTING OIL AND GAS-FIRED UNITS IF NEW COAL AND NUCLEAR UNITS ARE NOT BROUGHT ON-LINE

- CONTINUED RELIANCE ON EXISTING HIGH-COST OIL AND GAS FACILITIES ULTIMATELY WILL RESULT IN HIGHER ELECTRIC COSTS TO THE CONSUMER

IMPLICATIONS . . . RECENT TRENDS

UTILITIES HAVE SCALED BACK CONSTRUCTION PROGRAMS DRAMATICALLY IN RESPONSE TO DETERIORATING FINANCIAL CONDITIONS AND REDUCED DEMAND GROWTH. THE NET ORDERING RATE FOR NEW POWER PLANTS HAS BEEN ZERO OVER THE LAST EIGHT YEARS.

NET NEW CAPACITY COMMITMENTS

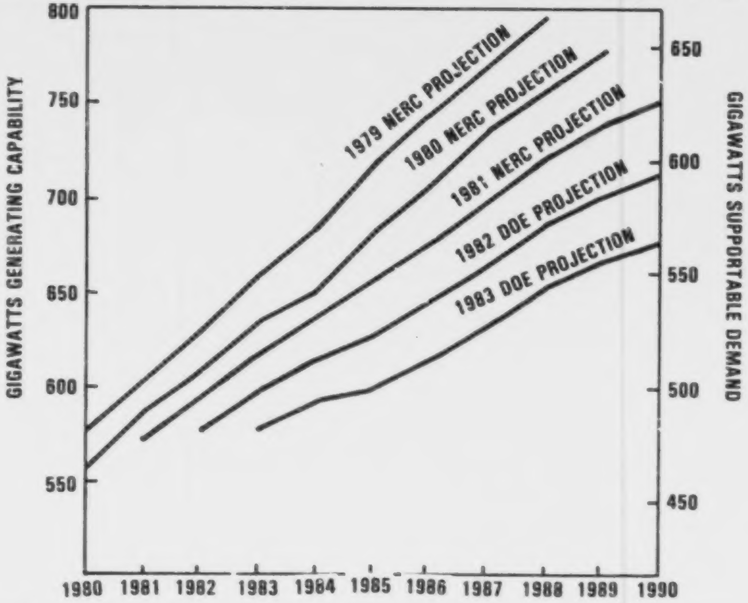


*FIRST QUARTER 1982
SOURCE: EDISON ELECTRIC INSTITUTE, ANNUAL ELECTRIC POWER SURVEY

IMPLICATIONS . . . NUCLEAR AND COAL CAPACITY

BECAUSE THEY REPRESENT OVER 90% OF GENERATING PLANT EITHER PLANNED OR UNDER CONSTRUCTION, CUTBACKS WILL RESULT IN DEFERRAL OR CANCELLATION OF NUCLEAR AND COAL POWERED FACILITIES

NERC AND DOE PROJECTIONS OF ELECTRICAL GENERATING CAPABILITY, 1980-1990

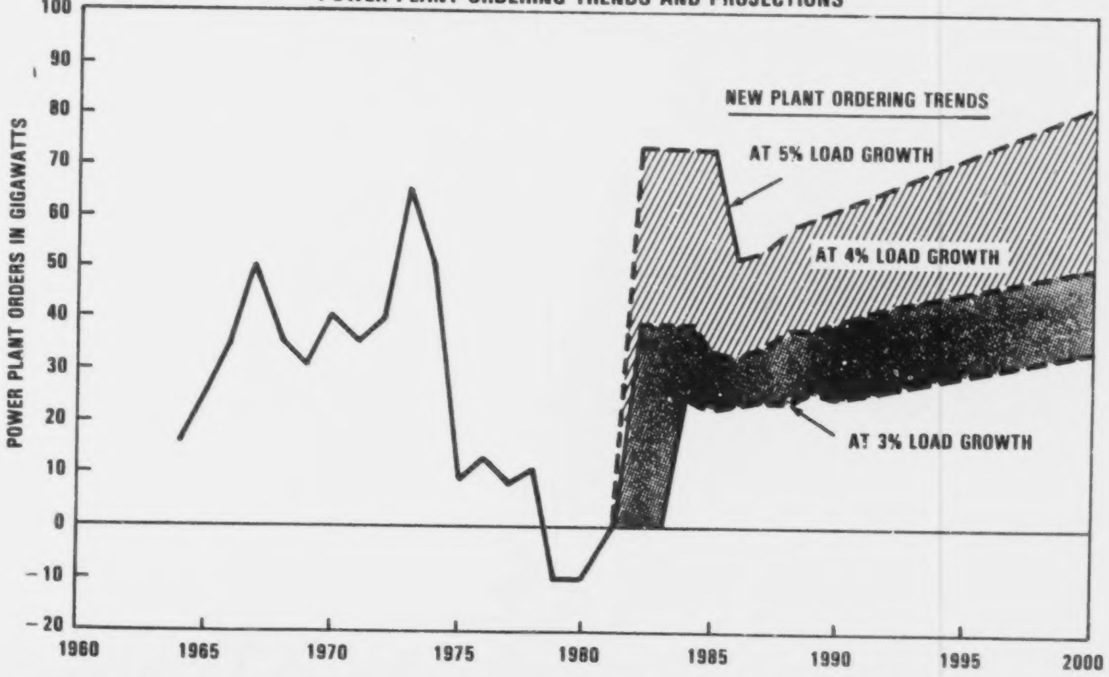


SOURCE: U.S. DEPARTMENT OF ENERGY, THE NATION'S ELECTRIC FUTURE; PERSPECTIVES ON THE ISSUE OF ELECTRICITY SUPPLY SUFFICIENCY, FEBRUARY 1982.

IMPLICATIONS . . . CAPACITY REQUIREMENTS

UTILITIES MUST MAKE SIGNIFICANT NEW CAPACITY COMMITMENTS IF RESERVE MARGINS AND SERVICE RELIABILITY ARE TO BE MAINTAINED

POWER PLANT ORDERING TRENDS AND PROJECTIONS*

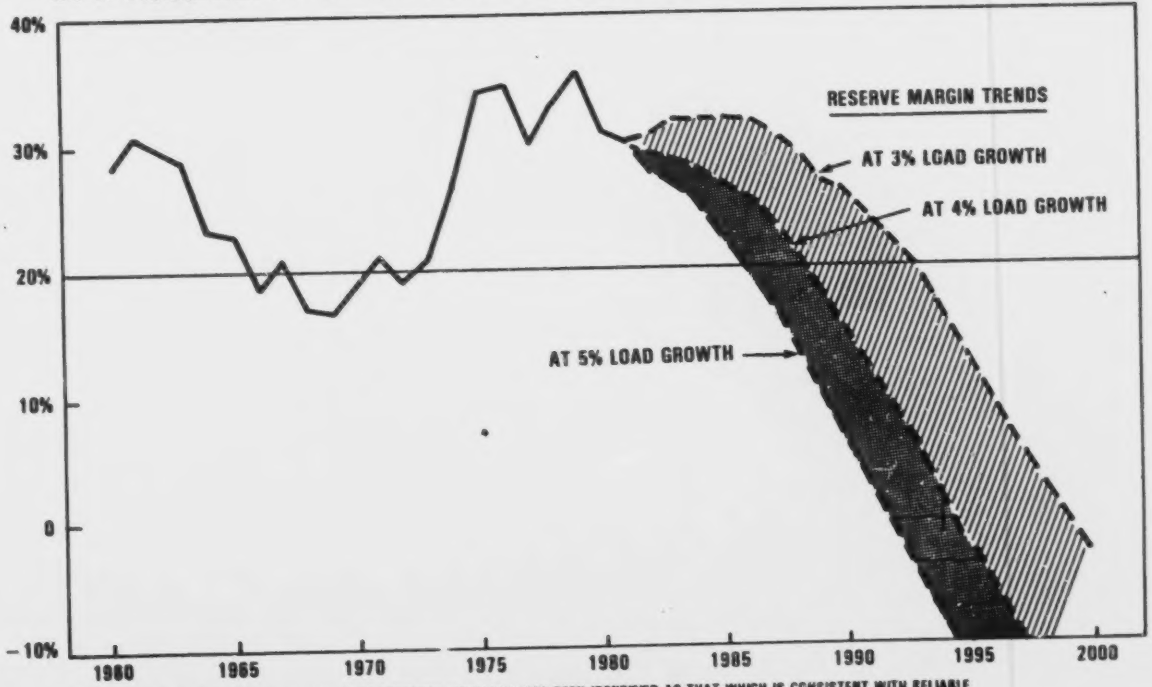


*PROJECTIONS OF PLANT ORDERS ASSUME A 10 YEAR LICENSING AND CONSTRUCTION LEAD TIME, MAINTENANCE OF A 20% CAPACITY RESERVE MARGIN, AND NO PLANT RETIREMENTS.

SOURCE: NERC, ELECTRIC POWER SUPPLY AND DEMAND, 1981-1990; EEI, ANNUAL POWER SURVEY, 1980; AND BOOZ, ALLEN & HAMILTON INC.

IMPLICATIONS . . . RESERVE MARGINS AND RELIABILITY

IF NEW CAPACITY IS NOT FORTHCOMING, RESERVE MARGINS AND SERVICE RELIABILITY WILL ALMOST CERTAINLY DETERIORATE. THIS DETERIORATION WOULD BE ACCELERATED BY A STRONG ECONOMIC RECOVERY RESULTING IN HIGHER LOAD GROWTH

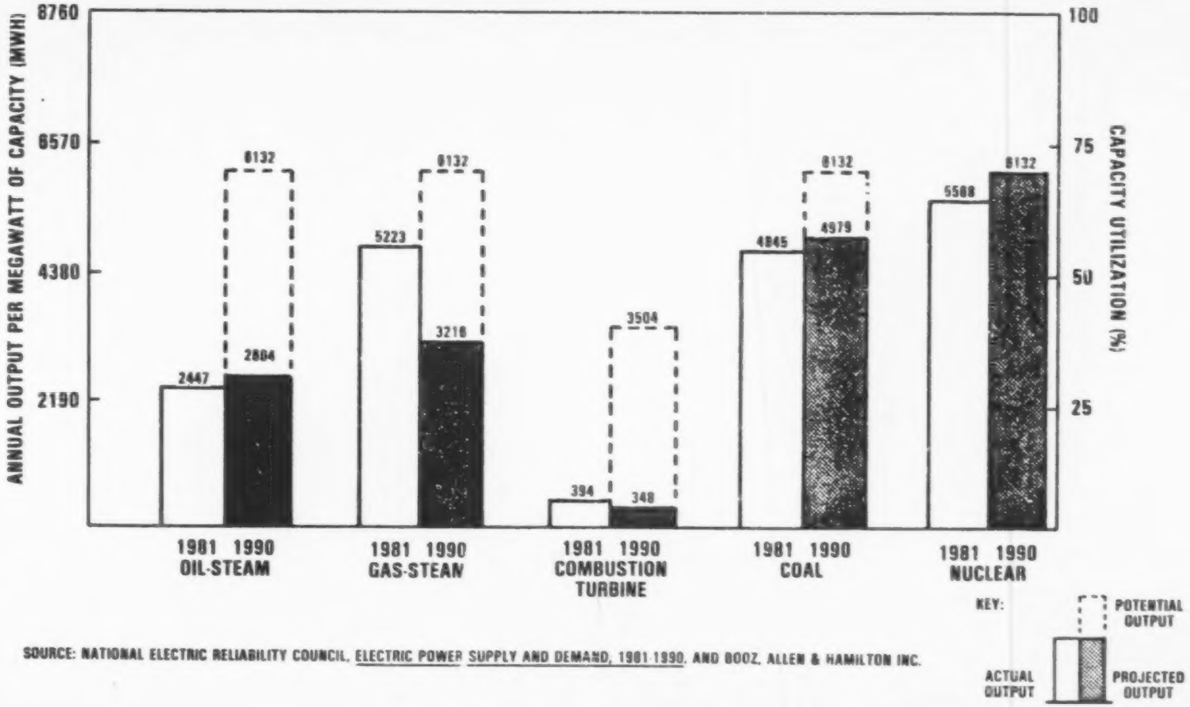


*HISTORICALLY, A NATIONAL RESERVE MARGIN OF APPROXIMATELY 20% HAS BEEN IDENTIFIED AS THAT WHICH IS CONSISTENT WITH RELIABLE ELECTRIC SERVICE. FOR SOME REGIONS A 25% RESERVE MARGIN MAY BE MORE APPROPRIATE, REFLECTING REGIONAL GRID CAPABILITIES AND PEAKING PHENOMENA.

SOURCE: NERC, ELECTRIC POWER SUPPLY AND DEMAND, 19 1-1990; EEI, ANNUAL POWER SURVEY, 1980; AND BOOZ, ALLEN & HAMILTON INC.

IMPLICATIONS . . . REPLACEMENT ENERGY

IN THE NEAR-TERM, REPLACEMENT ENERGY WILL BE SUPPLIED BY INCREASING THE USE OF EXISTING OIL AND GAS-FIRED UNITS IF NEW COAL AND NUCLEAR UNITS ARE NOT BROUGHT ON-LINE

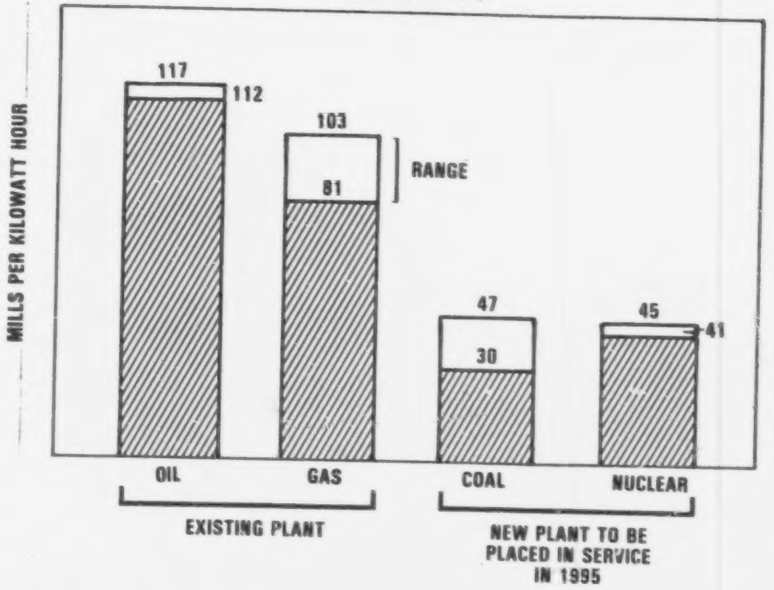


SOURCE: NATIONAL ELECTRIC RELIABILITY COUNCIL, ELECTRIC POWER SUPPLY AND DEMAND, 1981-1990, AND BOOZ, ALLEN & HAMILTON INC.

IMPLICATIONS . . . COST OF SERVICE

CONTINUED RELIANCE ON EXISTING HIGH-COST OIL AND GAS FACILITES ULTIMATELY WILL RESULT IN HIGHER ELECTRIC COSTS TO THE CONSUMER

PROJECTED ELECTRICITY GENERATION
BUSBAR COSTS
(1980 DOLLARS)



SOURCE: U.S. ENERGY INFORMATION AGENCY, PROJECTED COSTS OF ELECTRICITY FROM NUCLEAR AND COAL-FIRED POWER PLANTS (1982).

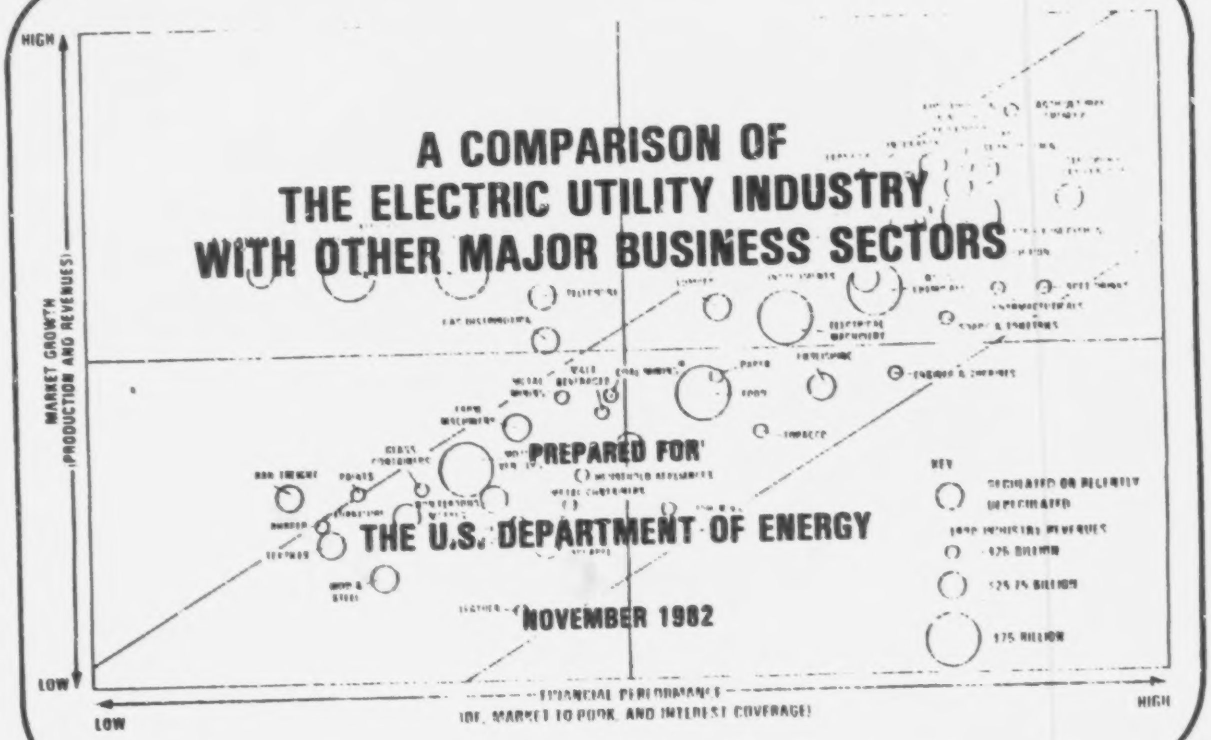
CONCLUSIONS . . . SUMMARY

THE UTILITY INDUSTRY IS AFFLICTED BY FUNDAMENTAL FINANCIAL AND REGULATORY PROBLEMS. IF THESE PROBLEMS ARE NOT ADDRESSED, NEW CAPACITY MAY NOT BE PROVIDED FAST ENOUGH TO PREVENT FURTHER RESERVE MARGIN DETERIORATION, WITH THE FOLLOWING RESULTS:

- THE COST OF ELECTRICITY WILL INCREASE RAPIDLY AND UNNECESSARILY IF UNECONOMIC AND INEFFICIENT SOURCES OF POWER ARE USED
- SERVICE RELIABILITY MAY DETERIORATE AS LIMITED ELECTRICITY SUPPLIES ARE ALLOCATED AMONG INCREASED ENERGY NEEDS.
- ELECTRICITY MARKETS MAY BE FORFEITED TO OTHER ENERGY FORMS THAT SERVE END-USE APPLICATIONS LESS EFFICIENTLY AND AT HIGHER COST.

THE LIMITED AVAILABILITY OF ECONOMIC AND RELIABLE ELECTRICITY SUPPLIES EVENTUALLY MAY CONSTRAIN ECONOMIC GROWTH, AND FORCE BUSINESSES TO RE-EVALUATE THEIR INVESTMENT DECISIONS

A COMPARISON OF THE ELECTRIC UTILITY INDUSTRY WITH OTHER MAJOR BUSINESS SECTORS



PREPARED FOR

THE U.S. DEPARTMENT OF ENERGY

NOVEMBER 1982

BOOZ·ALLEN & HAMILTON INC.

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IV. STUDY FINDINGS AND CONCLUSIONS

V. IMPLICATIONS

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APPENDIX B: MARKET AND FINANCIAL ANALYSIS TIME PERIOD EXPLANATION

I. REPORT SUMMARY

I. REPORT SUMMARY

DESPITE SIGNIFICANT INCREASES IN BOTH PRODUCT DEMAND AND REVENUES, THE ELECTRIC UTILITY INDUSTRY'S FINANCIAL HEALTH COMPARES POORLY WITH THAT OF OTHER MAJOR INDUSTRIAL SECTORS

- **THE ELECTRIC UTILITY INDUSTRY HAS EXPANDED BOTH PRODUCTION AND REVENUES AT A GREATER RATE THAN FOR THE AVERAGE OF ALL MANUFACTURING INDUSTRIES**
- **MOST OTHER INDUSTRIES WITH FAVORABLE MARKET GROWTH HAVE ACHIEVED STRONG FINANCIAL HEALTH**
- **THE ELECTRIC UTILITY INDUSTRY HAS FARED WORSE FINANCIALLY THAN MOST OTHER INDUSTRIES WHO HAVE REALIZED INCREASED DEMAND FOR THEIR OUTPUT**
- **THE REASONS FOR THIS DICHOTOMY LIE IN FUNDAMENTAL DIFFERENCES BETWEEN THE ELECTRIC UTILITY INDUSTRY AND OTHER INDUSTRIES. THESE DIFFERENCES INCLUDE PRICE REGULATION, LARGE CAPITAL REQUIREMENTS, AND LONG CONSTRUCTION LEAD TIMES**

II. MARKET GROWTH COMPARISON OF ELECTRIC UTILITIES AND OTHER INDUSTRIAL SECTORS

II. MARKET GROWTH COMPARISON OF ELECTRIC UTILITIES AND OTHER INDUSTRIAL SECTORS

FOR MOST DOMESTIC INDUSTRIES, PRODUCT DEMAND AND REVENUES HAVE EXPANDED IN THE LAST DECADE, ALTHOUGH THEIR RATES OF EXPANSION HAVE VARIED

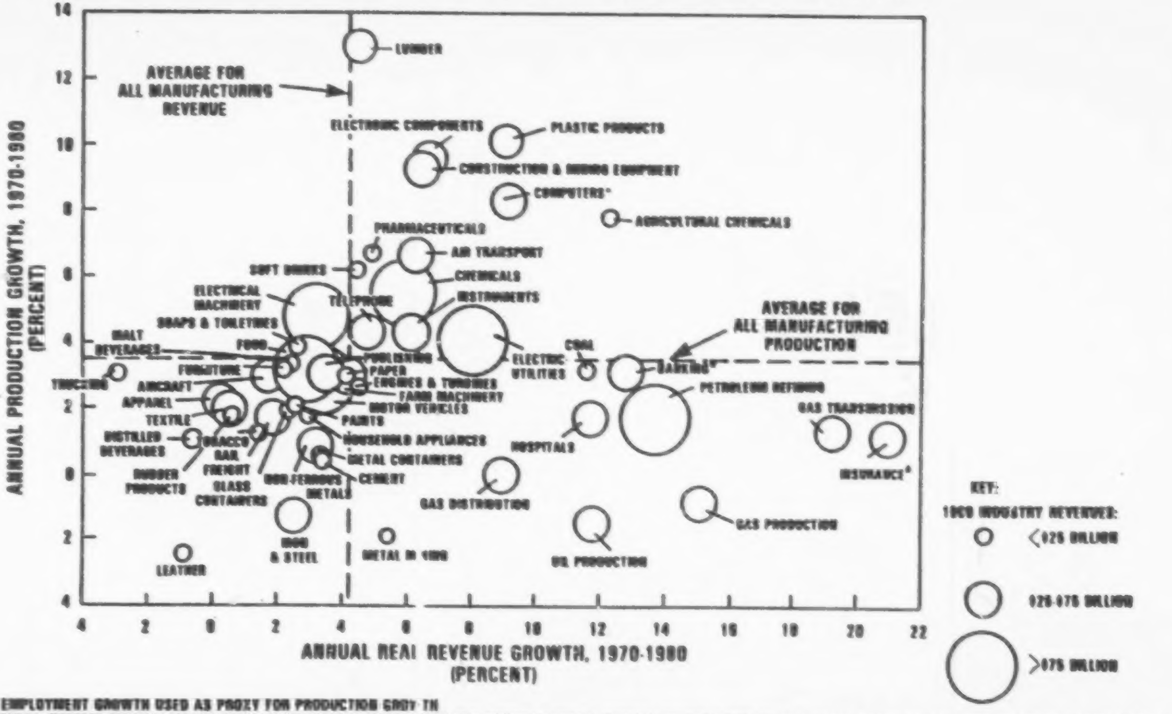
- FOR SEVERAL INDUSTRIES, PRODUCTION AND REVENUES HAVE EXPANDED AT A SIGNIFICANTLY GREATER RATE THAN THE AVERAGE FOR ALL MANUFACTURING INDUSTRIES COMBINED. THE ELECTRIC UTILITY INDUSTRY IS AMONG THIS GROUP

- OTHER INDUSTRIES HAVE EXPANDED PRODUCTION AT A SLOWER RATE, BUT HAVE ENJOYED RAPID REVENUE GROWTH DUE TO SHARP PRICE INCREASES OR A SHIFT TO A HIGHER-PRICED MIX OF PRODUCTS. THIS HAS BEEN CHARACTERISTIC OF ENERGY INDUSTRIES OTHER THAN THE ELECTRIC UTILITY INDUSTRY

- THE REMAINING INDUSTRIES HAVE INCREASED BOTH PRODUCTION AND TOTAL REVENUES AT A SLOWER RATE THAN FOR ALL MANUFACTURING INDUSTRIES

MARKET COMPARISON . . . RECENT TRENDS

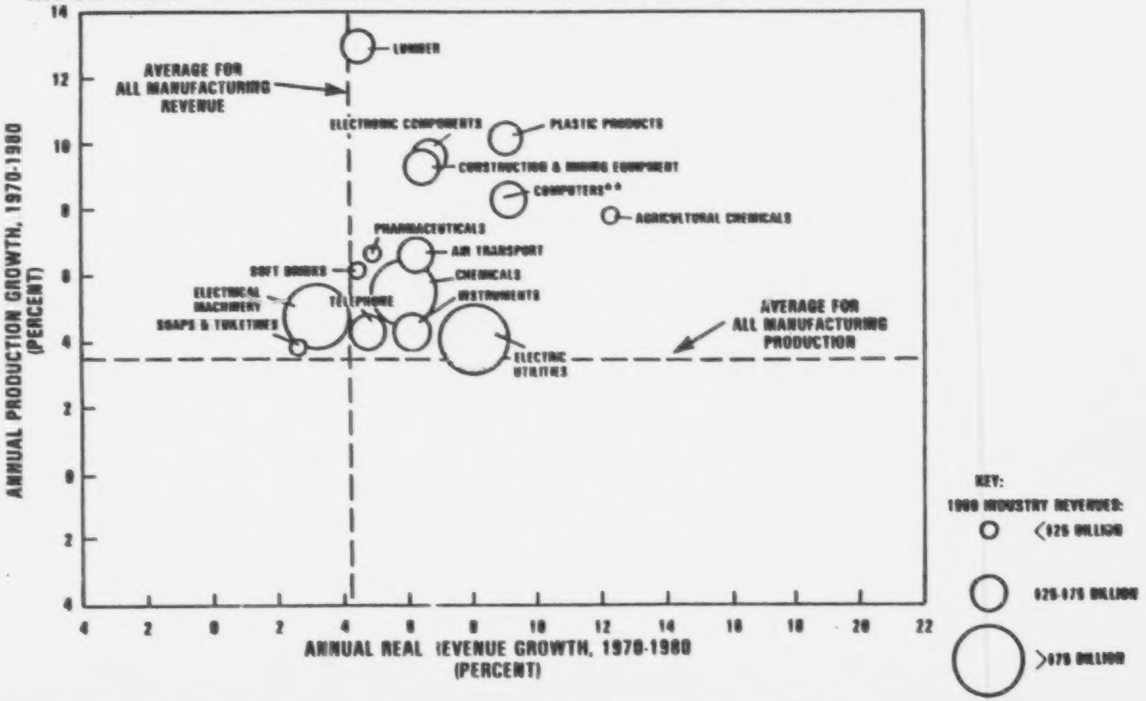
FOR MOST DOMESTIC INDUSTRIES PRODUCT DEMAND AND REVENUES HAVE EXPANDED IN THE LAST DECADE, ALTHOUGH THEIR RATES OF EXPANSION HAVE VARIED



* EMPLOYMENT GROWTH USED AS PROXY FOR PRODUCTION GROWTH
SOURCE: FEDERAL RESERVE BOARD INDEX OF INDUSTRIAL PRODUCTION; U.S. CENSUS BUREAU, ANNUAL SURVEY OF MANUFACTURERS, VALUE OF PRODUCT SHIPMENTS, 1970 & 1980.

MARKET COMPARISON . . . GROWING INDUSTRIES

FOR SEVERAL INDUSTRIES, PRODUCTION AND REVENUES HAVE EXPANDED AT A SIGNIFICANTLY GREATER RATE THAN FOR THE AVERAGE OF ALL MANUFACTURING INDUSTRIES.* THE ELECTRIC UTILITY INDUSTRY IS AMONG THIS GROUP



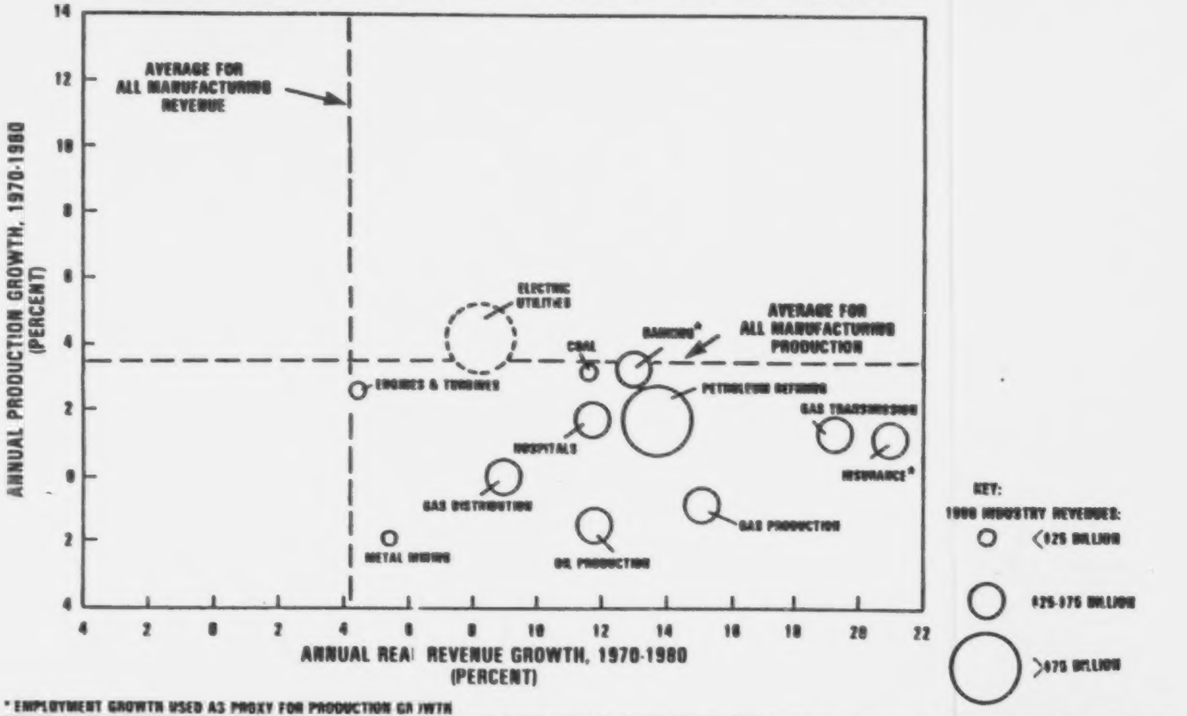
* ELECTRICAL MACHINERY AND SOAPS AND TOILETRIES HAVE ACHIEVED STRONG PRODUCTION GROWTH IN CONTRAST TO SLIGHTLY SLOWER REAL REVENUE GROWTH.

** EMPLOYMENT GROWTH USED AS PROXY FOR PRODUCTION GROWTH.

SOURCE: FEDERAL RESERVE BOARD INDEX OF INDUSTRIAL PRODUCTION; U.S. CENSUS BUREAU, ANNUAL SURVEY OF MANUFACTURERS, VALUE OF PRODUCT SHIPMENTS, 1970 & 1980.

MARKET COMPARISON . . . GROWING INDUSTRIES

OTHER INDUSTRIES HAVE EXPANDED PRODUCTION AT A SLOWER RATE, BUT HAVE ENJOYED RAPID REVENUE GROWTH DUE TO SHARP PRICE INCREASES OR A SHIFT TO A HIGHER-PRICED MIX OF PRODUCTS. THIS HAS BEEN CHARACTERISTIC OF ENERGY INDUSTRIES OTHER THAN THE ELECTRIC UTILITY INDUSTRY

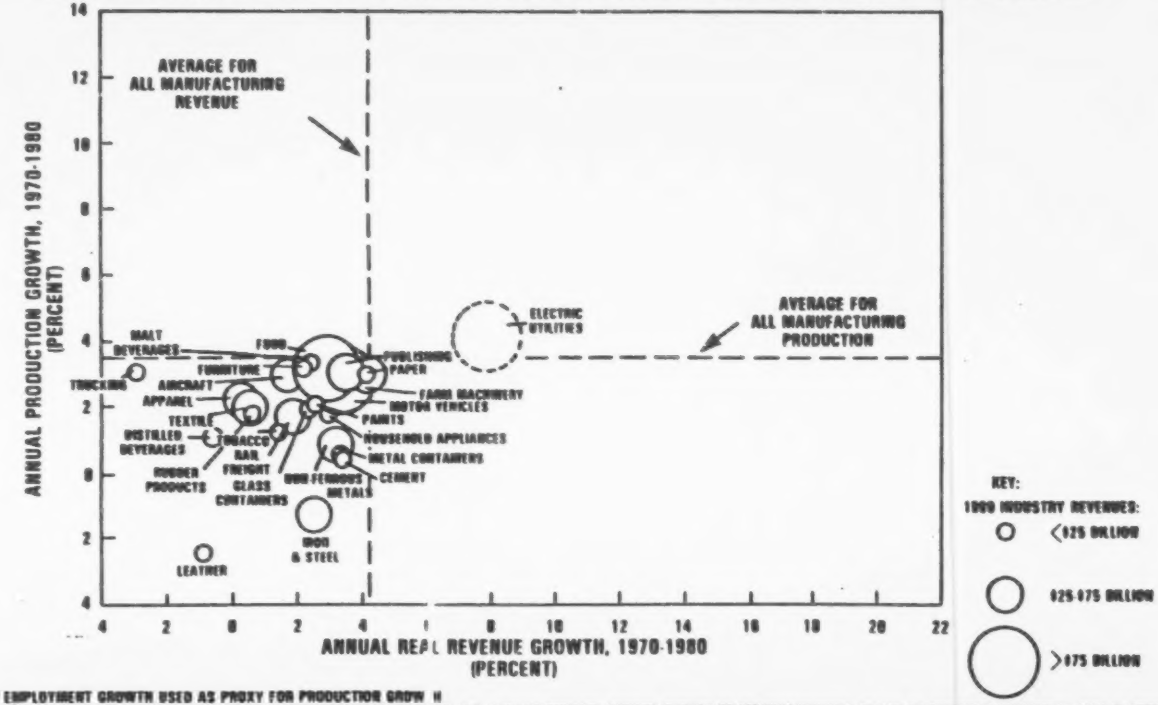


* EMPLOYMENT GROWTH USED AS PROXY FOR PRODUCTION GROWTH

SOURCE: FEDERAL RESERVE BOARD INDEX OF INDUSTRIAL PRODUCTION; U.S. CENSUS BUREAU, ANNUAL SURVEY OF MANUFACTURERS, VALUE OF PRODUCT SHIPMENTS, 1970 & 1980.

MARKET COMPARISON . . . INDUSTRIES IN DECLINE

THE REMAINING INDUSTRIES HAVE INCREASED BOTH PRODUCTION AND TOTAL REVENUES AT A SLOWER RATE THAN FOR ALL MANUFACTURING INDUSTRIES COMBINED



* EMPLOYMENT GROWTH USED AS PROXY FOR PRODUCTION GROWTH

SOURCE: FEDERAL RESERVE BOARD INDEX OF INDUSTRIAL PRODUCTION; U.S. CENSUS BUREAU, ANNUAL SURVEY OF MANUFACTURERS, VALUE OF PRODUCT SHIPMENTS, 1970 & 1980.

III. FINANCIAL COMPARISON OF ELECTRIC UTILITIES AND OTHER INDUSTRIAL SECTORS

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MARKET PERFORMANCE TENDS TO BE CORRELATED WITH FINANCIAL PERFORMANCE. THE ELECTRIC UTILITY INDUSTRY IS ONE OF ONLY A FEW INDUSTRIES WHICH DO NOT FIT THIS PATTERN

- MOST INDUSTRIES WITH BOTH STRONG OUTPUT AND REVENUE GROWTH HAVE BEEN RELATIVELY PROFITABLE AS MEASURED BY RETURNS TO COMMON EQUITY SHAREHOLDERS. WITHIN THIS GROUP THE ELECTRIC UTILITY INDUSTRY HAS BEEN A RELATIVELY WEAK PERFORMER, PARTICULARLY ON A CASH EARNINGS BASIS*

- THOSE INDUSTRIES WHOSE REVENUES HAVE GROWN ESPECIALLY FAST HAVE ACHIEVED SIGNIFICANTLY GREATER CASH PROFITABILITY THAN ELECTRIC UTILITIES. THIS IS PARTICULARLY TRUE OF OTHER ENERGY INDUSTRIES

- POOR MARKET PERFORMERS HAVE GENERALLY FARED WORSE THAN INDUSTRIES WITH GROWING MARKETS. DESPITE ITS STRONGER MARKET GROWTH, ELECTRIC UTILITY PROFITABILITY IS APPROXIMATELY EQUAL TO THE AVERAGE FOR THIS GROUP, AND IS BELOW IF NON-CASH EARNINGS ARE EXCLUDED

- MOST STRONG MARKET PERFORMERS HAVE MAINTAINED STOCK PRICES IN EXCESS OF BOOK VALUE. THE ELECTRIC UTILITY INDUSTRY IS ONE OF A FEW INDUSTRIES IN THIS GROUP WHOSE STOCK IS SELLING BELOW BOOK VALUE

III. FINANCIAL COMPARISON OF ELECTRIC UTILITIES AND OTHER INDUSTRIAL SECTORS

- HIGH REVENUE-GROWTH INDUSTRIES ALSO HAVE MAINTAINED HIGH STOCK PRICES. ALTHOUGH THREE INDUSTRIES EXAMINED IN THIS GROUP SELL BELOW BOOK VALUE, ALL WERE RECENTLY SELLING AT A HIGHER RATIO THAN THE ELECTRIC UTILITY INDUSTRY

- IN CONTRAST, WEAK MARKET PERFORMERS HAVE HAD DIFFICULTY IN MAINTAINING THEIR STOCK PRICES AT BOOK VALUE. NEVERTHELESS, MOST HAVE FARED BETTER THAN THE ELECTRIC UTILITY INDUSTRY

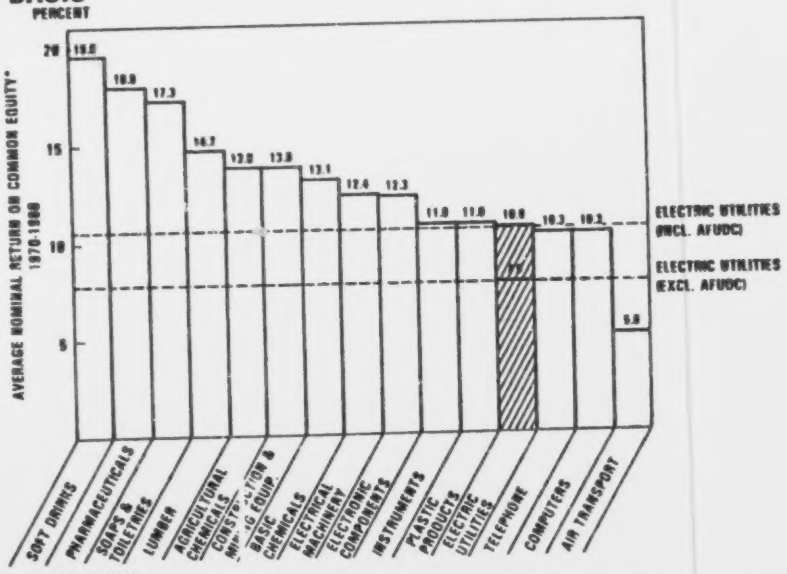
- STRONG MARKET PERFORMERS GENERALLY HAVE MAINTAINED A HIGH INTEREST COVERAGE RATIO. THIS IS AN IMPORTANT MEASURE OF LIQUIDITY AND SAFETY, INFLUENCING COMPANIES' BOND RATINGS AND THEREBY DETERMINING ACCESS TO CAPITAL. ELECTRIC UTILITY AVERAGE INTEREST COVERAGE IS EXCEEDED BY ALL BUT A FEW INDUSTRIES

- SIMILARLY, MOST HIGH REVENUE-GROWTH COMPANIES HAVE MAINTAINED HIGH INTEREST COVERAGE. AMONG THIS GROUP, ONLY THE COAL AND METAL MINING INDUSTRIES HAVE LOWER AVERAGE INTEREST COVERAGE THAN ELECTRIC UTILITIES

- ALTHOUGH AVERAGE INTEREST COVERAGE AMONG POOR MARKET PERFORMERS VARIES, ALL BUT THE MOTOR VEHICLE, FARM MACHINERY, AND CEMENT INDUSTRIES HAVE MAINTAINED HIGHER AVERAGE INTEREST COVERAGE THAN ELECTRIC UTILITIES

FINANCIAL COMPARISON. . . PROFITABILITY

MOST INDUSTRIES WITH STRONG MARKET POSITIONS HAVE BEEN RELATIVELY PROFITABLE AS MEASURED BY RETURNS TO COMMON EQUITY SHAREHOLDERS. WITHIN THIS GROUP THE ELECTRIC UTILITY INDUSTRY HAS BEEN A RELATIVELY WEAK PERFORMER, PARTICULARLY ON A CASH EARNINGS BASIS



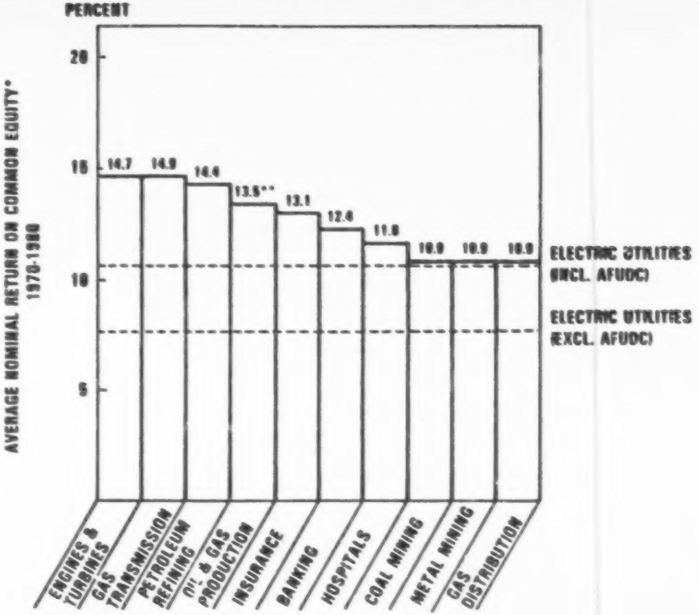
*INDUSTRY COMPOSITE, END OF YEAR.

**AFUDC = ALLOWANCE FOR FUNDS USED DURING CON TRUCTION, AN ACCOUNTING ADJUSTMENT REFLECTING CAPITAL EXPENDITURES BEFORE PLANT IS PLACED IN SERVICE. IT PROVIDES NO CASH R TURN.

SOURCE: COMPUSTAT; EDISON ELECTRIC INSTITUTE, ST TISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY.

FINANCIAL COMPARISON. . . PROFITABILITY

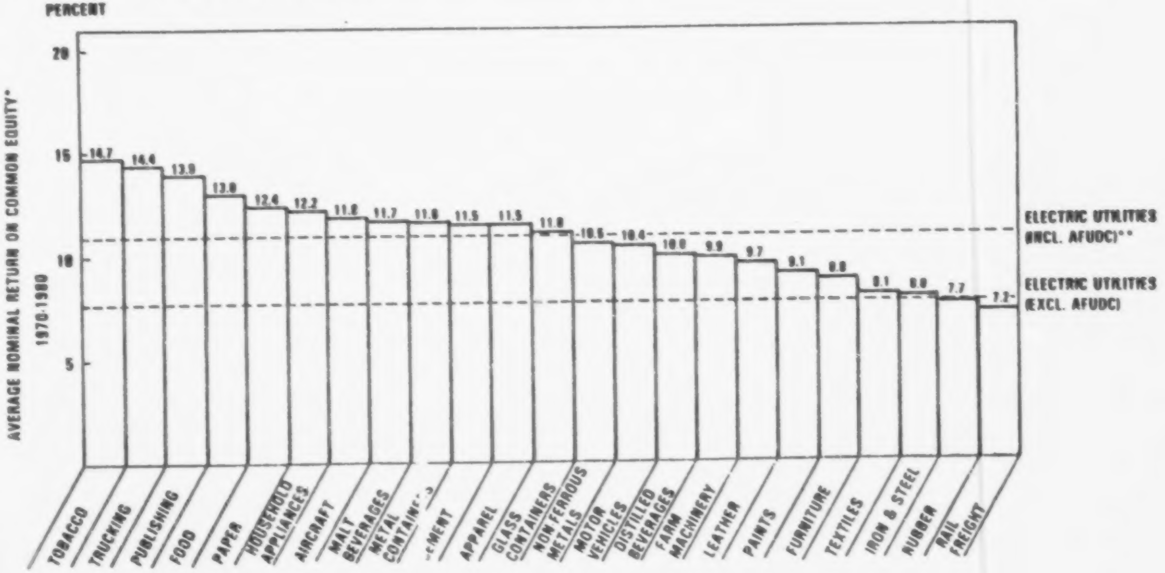
THOSE INDUSTRIES WHOSE REVENUES HAVE GROWN ESPECIALLY FAST HAVE ACHIEVED GREATER CASH PROFITABILITY THAN ELECTRIC UTILITIES. THIS IS PARTICULARLY TRUE OF OTHER ENERGY INDUSTRIES



*INDUSTRY COMPOSITE, END OF YEAR. **BENCHMARK COMPANIES.
SOURCE: COMPUSTAT; EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY.

FINANCIAL COMPARISON... PROFITABILITY

POOR MARKET PERFORMERS GENERALLY HAVE FARED WORSE FINANCIALLY THAN INDUSTRIES WITH GROWING MARKETS. DESPITE ITS STRONGER MARKET GROWTH, ELECTRIC UTILITY PROFITABILITY IS APPROXIMATELY EQUAL TO THE AVERAGE FOR THIS GROUP, AND IS BELOW AVERAGE IF NON-CASH EARNINGS ARE EXCLUDED

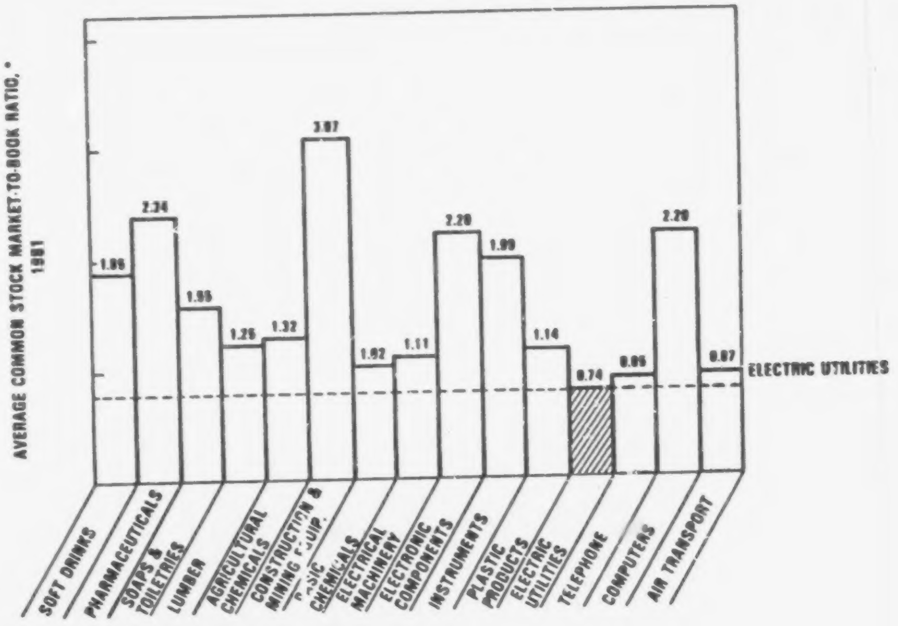


*INDUSTRY COMPOSITE, END OF YEAR.

SOURCE: COMPUSTAT; ED ECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY.

FINANCIAL COMPARISON. . . STOCK PRICES

MOST STRONG MARKET PERFORMERS HAVE MAINTAINED STOCK PRICES IN EXCESS OF BOOK VALUE. THE ELECTRIC UTILITY INDUSTRY IS ONE OF A FEW INDUSTRIES IN THIS GROUP WHOSE STOCK IS SELLING BELOW BOOK VALUE

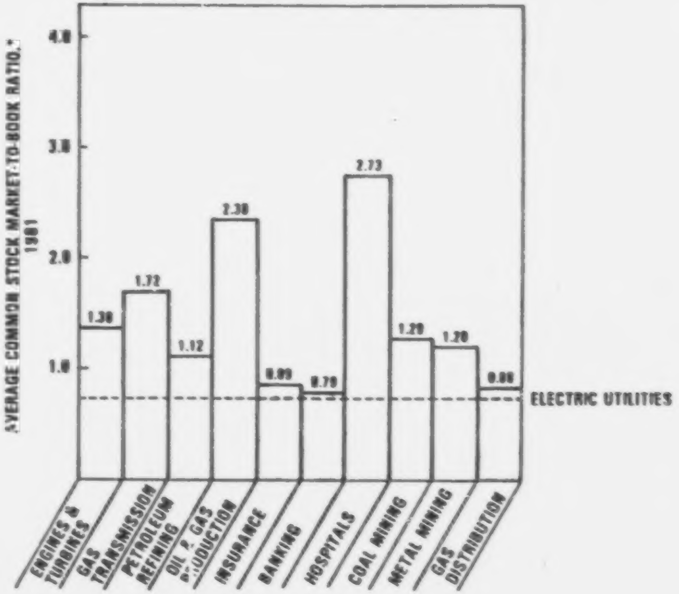


*AVERAGE OF YEAR'S HIGH AND LOW VALUE FOR INDUS RY COMPOSITE.

SOURCE: COMPUSTAT; EDISON ELECTRIC INSTITUTE, STA ISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY.

FINANCIAL COMPARISON. . . STOCK PRICES

HIGH REVENUE-GROWTH INDUSTRIES ALSO HAVE MAINTAINED HIGH STOCK PRICES. ALTHOUGH THREE INDUSTRIES EXAMINED IN THIS GROUP SELL BELOW BOOK VALUE, ALL WERE RECENTLY SELLING AT A HIGHER RATIO THAN THE ELECTRIC UTILITY INDUSTRY

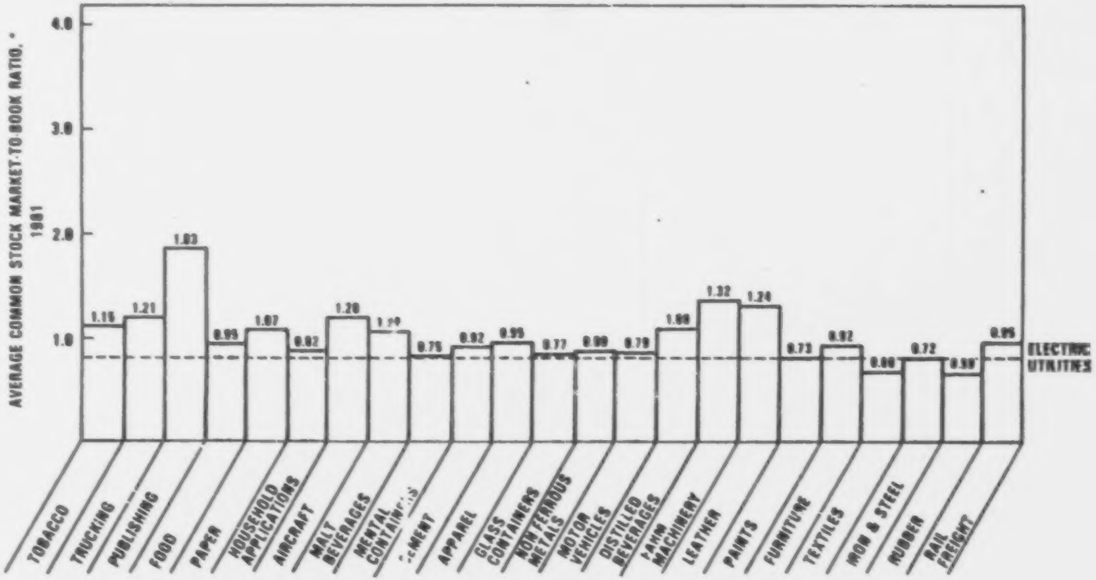


*AVERAGE OF YEAR'S HIGH AND LOW VALUE FOR INDUSTRY COMPOSITE.

SOURCE: COMPUSTAT; EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY.

FINANCIAL COMPARISON. . . STOCK PRICES

IN CONTRAST, WEAK MARKET PERFORMERS HAVE HAD DIFFICULTY IN MAINTAINING THEIR STOCK PRICES AT BOOK VALUE. NEVERTHELESS, ALL BUT TEXTILES AND RUBBER HAVE FARED BETTER THAN THE ELECTRIC UTILITY INDUSTRY

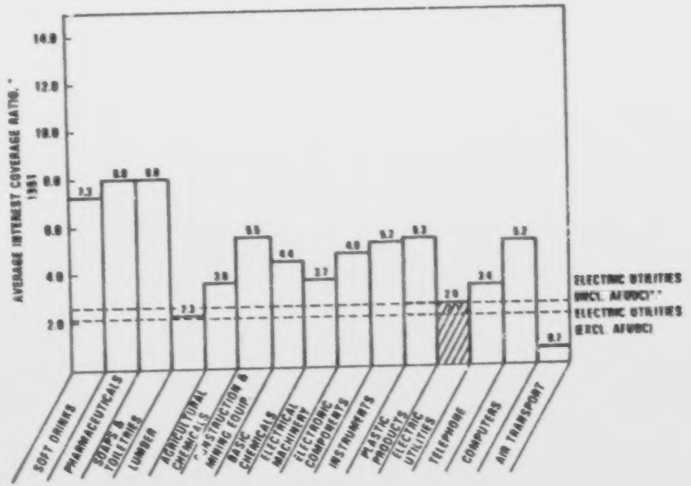


*AVERAGE OF YEAR'S HIGH AND LOW VALUE FOR INDUSTRY COMPOSITE.

SOURCE: COMPUSTAT; EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY.

FINANCIAL COMPARISON. . . INTEREST COVERAGE

STRONG MARKET PERFORMERS GENERALLY HAVE MAINTAINED A HIGH INTEREST COVERAGE RATIO*. THIS IS AN IMPORTANT MEASURE OF LIQUIDITY AND SAFETY, INFLUENCING COMPANIES' BOND RATINGS AND THEREBY DETERMINING ACCESS TO CAPITAL. ELECTRIC UTILITY AVERAGE INTEREST COVERAGE IS EXCEEDED BY ALL BUT A FEW INDUSTRIES



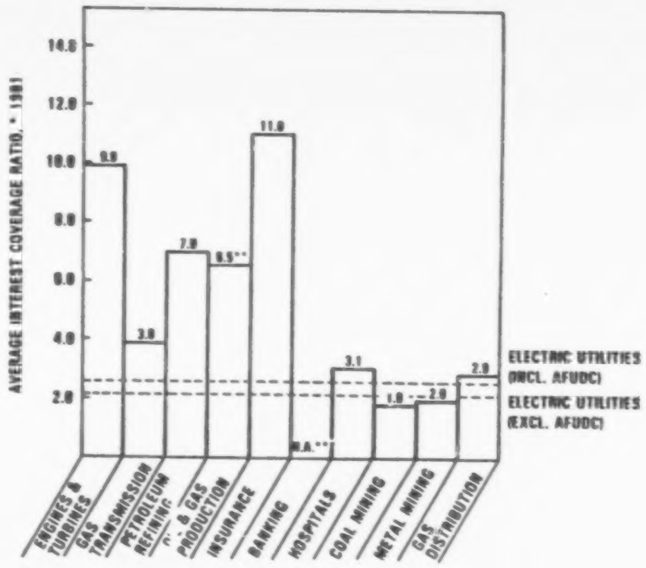
*RATIO OF INCOME AVAILABLE FOR DEBT INTEREST PAYMENTS TO THE DOLLAR VALUE OF INTEREST CHARGES.

**INDUSTRY COMPOSITE, END OF YEAR.

SOURCE: COMPUSTAT; EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY.

FINANCIAL COMPARISON. . . INTEREST COVERAGE

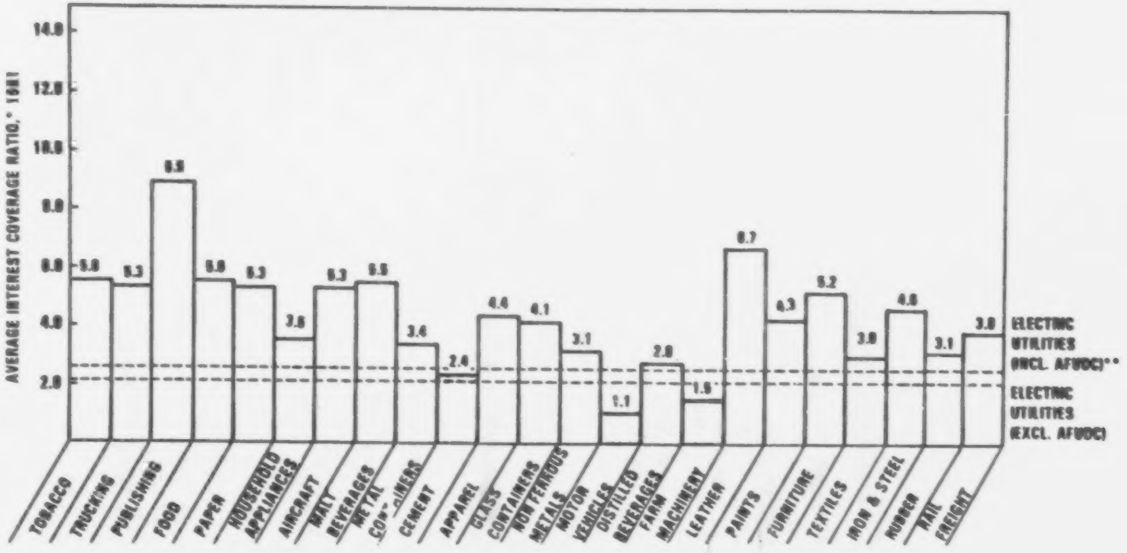
SIMILARLY, MOST HIGH REVENUE-GROWTH COMPANIES HAVE MAINTAINED HIGH INTEREST COVERAGE. AMONG THIS GROUP, ONLY THE COAL AND METAL MINING INDUSTRIES HAVE LOWER AVERAGE INTEREST COVERAGE THAN ELECTRIC UTILITIES.



*INDUSTRY COMPOSITE, END OF YEAR.
**BENCHMARK COMPANIES.
***NOT AVAILABLE.
SOURCE: COMPUSTAT; EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY.

FINANCIAL COMPARISON. . . INTEREST COVERAGE

ALTHOUGH AVERAGE INTEREST COVERAGE AMONG POOR MARKET PERFORMERS VARIES WIDELY, ALL BUT THE MOTOR VEHICLE, FARM MACHINERY, AND CEMENT INDUSTRIES HAVE MAINTAINED HIGHER AVERAGE INTEREST COVERAGE THAN ELECTRIC UTILITIES.

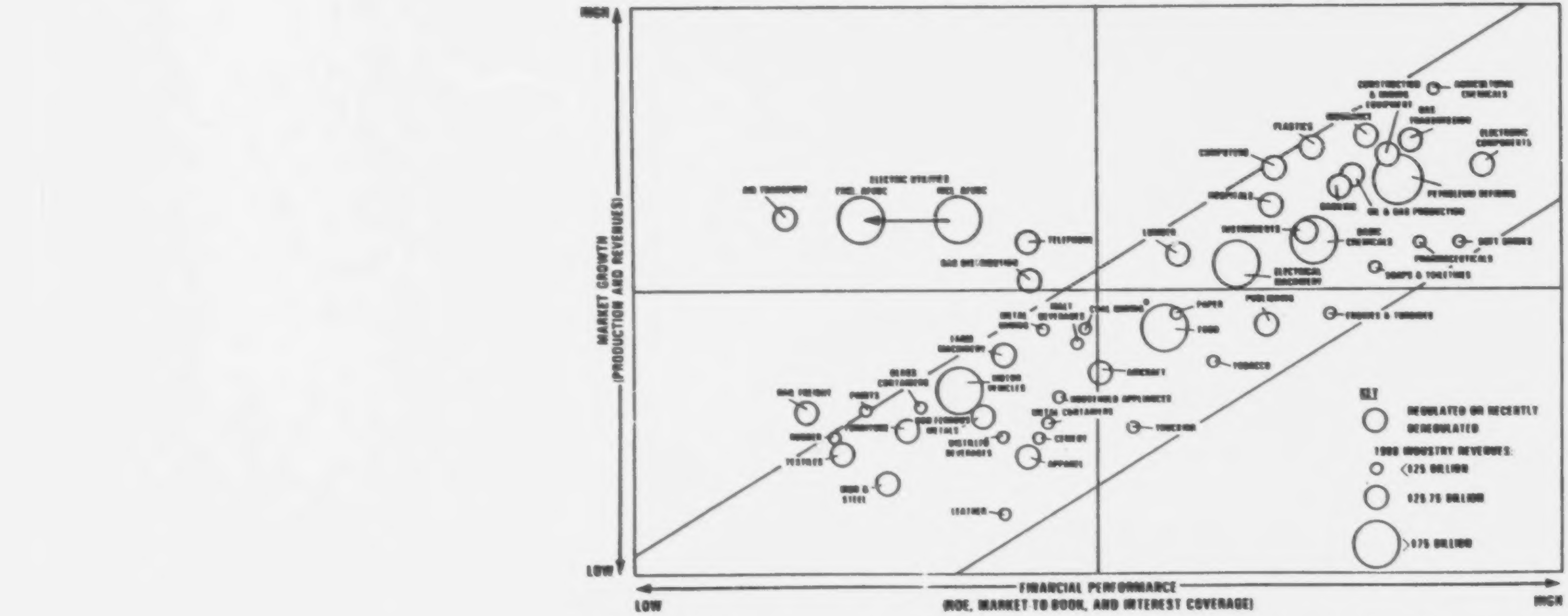


*INDUSTRY COMPOSITE, END OF YEAR.

SOURCE: COMPUSTAT; EDISON ELECTRIC INSTITUTE, STATISTICAL YEARBOOK OF THE ELECTRIC UTILITY INDUSTRY.

FINANCIAL COMPARISON . . . SUMMARY

IN SUMMARY, MARKET PERFORMANCE TENDS TO BE CORRELATED WITH FINANCIAL PERFORMANCE. THE ELECTRIC UTILITY INDUSTRY IS ONE OF ONLY A FEW INDUSTRIES WHICH DO NOT FIT THIS PATTERN



*COAL PRICES HAVE REMAINED RELATIVELY STABLE IN REAL TERMS FOR MANY YEARS, MAINTAINING REAL REVENUE GROWTH EQUAL TO PRODUCTION GROWTH EXCEPT IN 1973-1974. THIS EVALUATION OF COAL MARKET GROWTH IS BASED SOLELY ON PRODUCTION.

SOURCE: BOOZ, ALLEN & HAMILTON, INC.

IV. STUDY FINDINGS AND CONCLUSIONS

IV. STUDY FINDINGS AND CONCLUSIONS

FINANCIAL PERFORMANCE IS CORRELATED WITH PRODUCT AND REVENUE GROWTH FOR ALL BUT A FEW INDUSTRIES, ALL OF WHICH ARE, OR UNTIL RECENTLY WERE, PRICE-REGULATED. THE ELECTRIC UTILITY INDUSTRY IS AMONG THIS GROUP

- INDUSTRIES OTHER THAN THE ELECTRIC UTILITY INDUSTRY HAVE SUFFERED FINANCIALLY DUE TO PRICE REGULATION, BUT MOST ARE EXPECTED TO IMPROVE DUE TO CHANGES IN THEIR REGULATORY ENVIRONMENT

- ELECTRICITY PRICES HAVE RISEN MODESTLY COMPARED TO OIL AND GAS, IN PART BECAUSE OF RATE DECISIONS BY REGULATORY AUTHORITIES

- AS A RESULT, THE RATE OF INCREASE IN ELECTRIC UTILITY INDUSTRY REVENUES HAS TRAILED SIGNIFICANTLY BEHIND OIL AND GAS INDUSTRY REVENUES, DESPITE THE FASTER GROWTH OF ELECTRICTY CONSUMPTION RELATIVE TO THAT OF OIL AND GAS

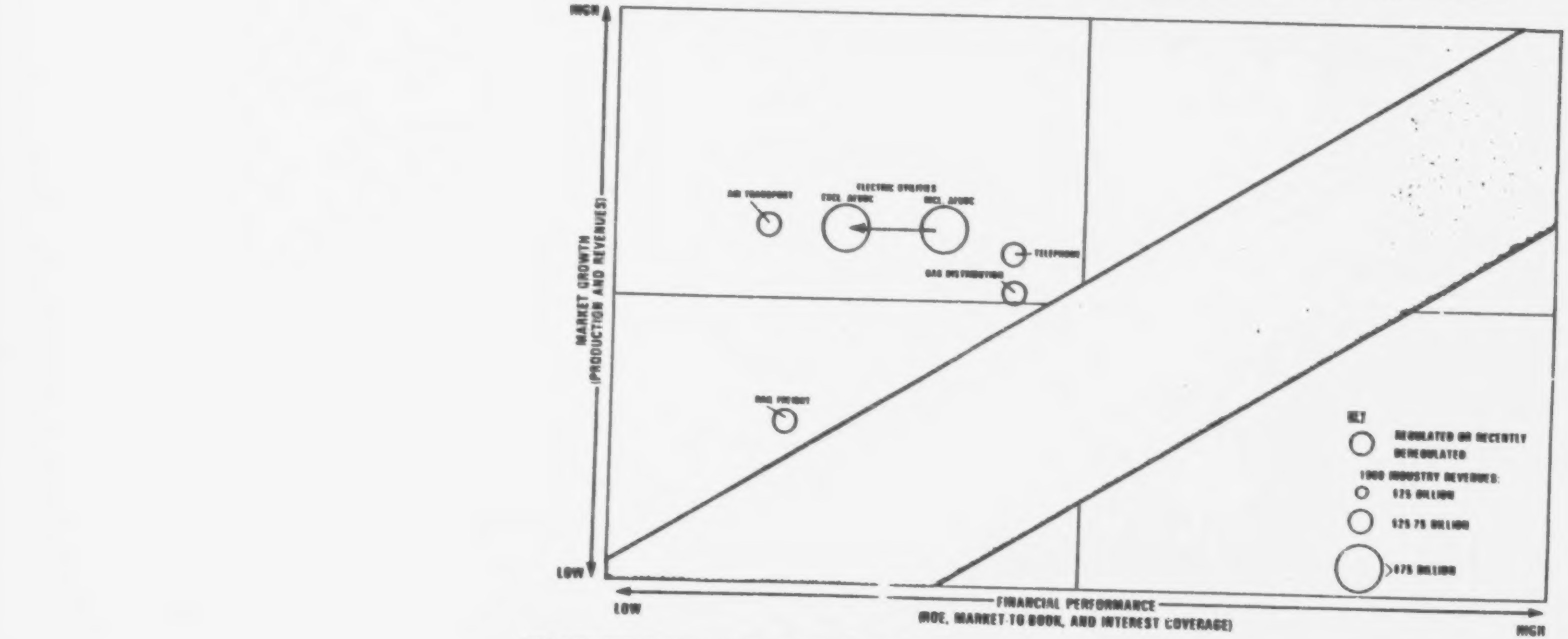
- REVENUE CONSTRAINTS HAVE CONTRIBUTED TO A LIQUIDITY SHORTAGE IN THE ELECTRIC UTILITY INDUSTRY. ALTHOUGH ELECTRIC UTILITY RETURN ON SHAREHOLDER EQUITY IS NOT THE LOWEST AMONG THE REGULATED INDUSTRIES, NON-CASH EARNINGS ACCOUNTED FOR AN AVERAGE OF ONE-THIRD OF TOTAL EARNINGS IN RECENT YEARS, RISING TO NEARLY ONE-HALF IN 1981. AS A RESULT, THE INDUSTRY IS HEAVILY DEPENDENT ON THE FINANCIAL MARKETS TO SUPPORT CONSTRUCTION EXPENDITURES

IV. STUDY FINDINGS AND CONCLUSIONS (CONT.)

- THE ELECTRIC UTILITY INDUSTRY IS AMONG THE MOST CAPITAL-INTENSIVE OF DOMESTIC INDUSTRIES, COMPOUNDING ITS NEED FOR CASH GENERATION
- CONSTRAINED PRICES EXPLAIN WHY THE ELECTRIC UTILITY INDUSTRY MUST ALLOCATE A DISPROPORTIONATE SHARE OF THE REVENUE DOLLAR TO SUPPORT SPENDING ON NEW PLANT COMPARED TO OTHER CAPITAL-INTENSIVE INDUSTRIES
- THE UTILITY INDUSTRY'S REGULATORY AND CAPITAL INTENSITY PROBLEMS ARE COMPOUNDED BY THE NATURE OF THE TECHNOLOGIES IN WHICH IT MUST INVEST. FOR EXAMPLE, ALTHOUGH OTHER REGULATED INDUSTRIES REQUIRE LARGE AMOUNTS OF CAPITAL, CONSTRUCTION LEAD TIMES ARE FAR LONGER IN THE ELECTRIC UTILITY INDUSTRY
- THESE LONG CONSTRUCTION LEAD TIMES RESULT IN SIGNFICANTLY LARGER AMOUNTS OF CONSTRUCTION WORK IN PROGRESS (CWIP) IN THE ELECTRIC UTILITY INDUSTRY. BECAUSE REGULATORS TYPICALLY ALLOW LITTLE CASH RETURN ON CWIP, CASH EARNINGS ARE ADVERSELY AFFECTED IF A CONSTRUCTION PROGRAM OF ANY SIGNIFICANCE IS ATTEMPTED

CONCLUSIONS . . . FINANCIAL VS. MARKET PERFORMANCE

FINANCIAL PERFORMANCE IS POSITIVELY CORRELATED WITH MARKET PERFORMANCE FOR ALL BUT A FEW INDUSTRIES, ALL OF WHICH ARE, OR UNTIL RECENTLY WERE, PRICE-REGULATED. THE ELECTRIC UTILITY INDUSTRY IS AMONG THIS GROUP



NOTE: GREY BAND INDICATES RELATIONSHIP BETWEEN MARKET GROWTH AND FINANCIAL PERFORMANCE REPRESENTED BY ALL OTHER INDUSTRIES (SEE P. III-12).

SOURCE: BOOZ, ALLEN & HAMILTON, INC.

CONCLUSIONS . . . OTHER REGULATED INDUSTRIES

INDUSTRIES OTHER THAN THE ELECTRIC UTILITY INDUSTRY HAVE SUFFERED FINANCIALLY DUE TO PRICE REGULATION, BUT MOST ARE EXPECTED TO IMPROVE DUE TO CHANGES IN THEIR REGULATORY ENVIRONMENT

- THE AIR TRANSPORT INDUSTRY OVEREXPANDED IN AN ERA OF PROTECTED MARKETS AND IS NOW IN A POST-REGULATORY TRANSITION PERIOD. INDUSTRY FINANCIAL PERFORMANCE WILL REMAIN WEAK UNTIL EXCESS CAPACITY IS REDUCED BY MARKET GROWTH OR CORPORATE ATTRITION

- THE RAIL FREIGHT INDUSTRY HAS BEEN FORCED TO MAINTAIN EXCESS TRACKAGE, UNECONOMIC TARIFFS, AND INEFFICIENT INDUSTRY STRUCTURE. RECENT REFORM OF RATE STRUCTURE AND A MORE LIBERAL ATTITUDE TOWARD MERGERS WILL REDUCE THE NUMBER OF CARRIERS BUT IS LIKELY TO RESULT IN A MORE PROFITABLE INDUSTRY

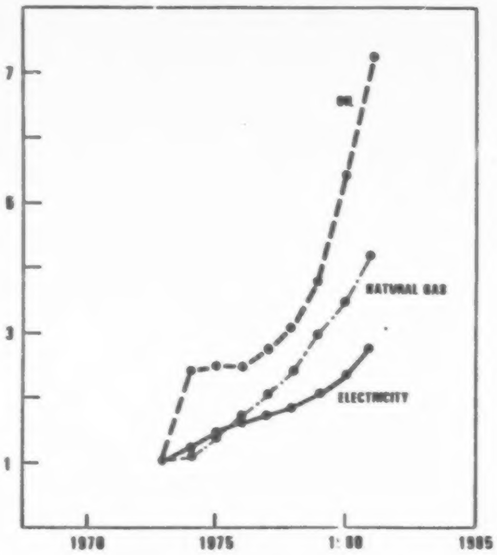
- THE TELEPHONE INDUSTRY HAS BEEN FORCED TO SUBSIDIZE THE COST OF LOCAL SERVICE WITH REVENUES FROM LONG-DISTANCE OPERATIONS. SEPARATION OF THESE SERVICES WILL ALLOW A MORE REALISTIC APPRAISAL OF OPERATING COST AND RETURN ON REGULATED OPERATIONS

- INCREASED REVENUES FROM GAS TRANSMISSION AND DISTRIBUTION ARE LARGELY DUE TO DIRECT PASS-THROUGH OF HIGHER PURCHASED GAS COSTS. IN ADDITION, GAS TRANSMISSION AND, TO A LESSER EXTENT, DISTRIBUTION COMPANIES HAVE PURSUED DIVERSIFICATION INTO EXPLORATION AND PRODUCTION. PARTICIPATION IN THESE RECENTLY DEREGULATED ACTIVITIES HAS BEGUN TO INCREASE THEIR PROFITABILITY AND STOCK VALUES

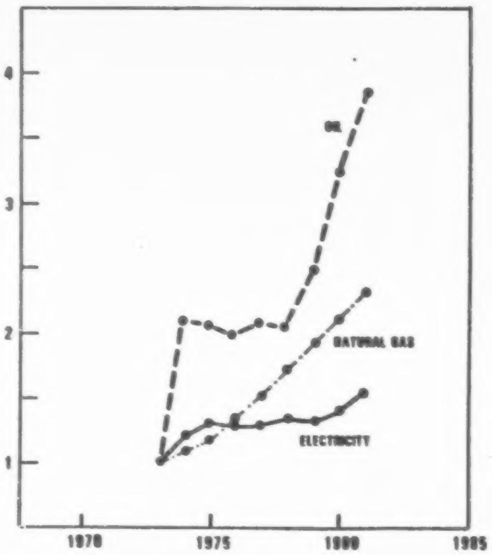
CONCLUSIONS . . . ENERGY PRICES

ELECTRICITY PRICES HAVE RISEN MODESTLY COMPARED TO OIL AND GAS, ELECTRICITY'S PRIMARY COMPETITORS, IN PART BECAUSE OF RATE DECISIONS BY REGULATORY AUTHORITIES

INDEX OF ENERGY PRICES ON A NOMINAL (CURRENT DOLLAR) BASIS



INDEX OF ENERGY PRICES ON A REAL (CONSTANT DOLLAR) BASIS (1972$)

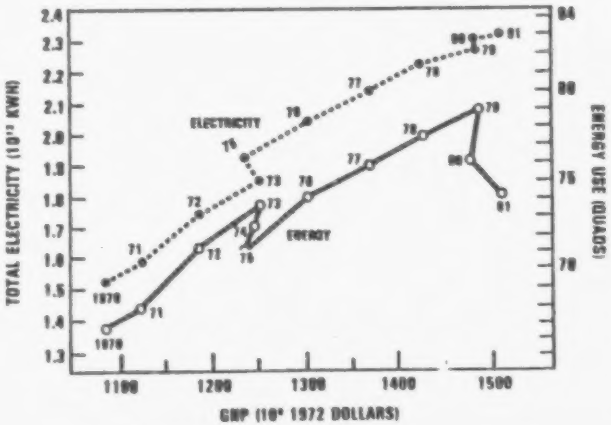


NATURAL GAS — PRICE IS AVERAGE OF RESIDENTIAL HEATING GAS.
OIL — PRICE IS AVERAGE OF HOME HEATING OIL.
ELECTRICITY — PRICE IS AVERAGE OF RESIDENTIAL, COMMERCIAL AND INDUSTRIAL CHARGE.

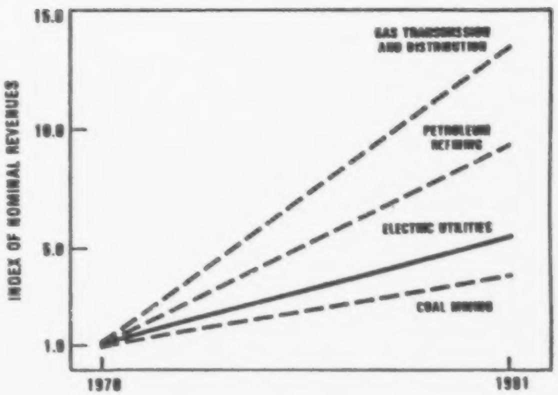
CONCLUSIONS . . . ENERGY INDUSTRY REVENUES

AS A RESULT, THE RATE OF INCREASE IN ELECTRIC UTILITY INDUSTRY REVENUES HAS TRAILED SIGNIFICANTLY BEHIND OIL AND GAS INDUSTRY REVENUES, DESPITE THE FASTER GROWTH OF ELECTRICITY CONSUMPTION RELATIVE TO THAT OF OIL AND GAS

ELECTRICITY VS. TOTAL ENERGY CONSUMPTION



ENERGY INDUSTRY REVENUES

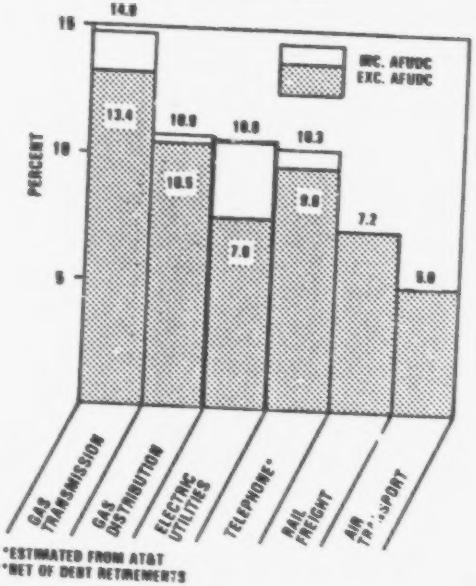


SOURCE: U.S. ENERGY INFORMATION AGENCY, MONTHLY ENERGY REVIEW, AND COMPUSTAT (INDUSTRY REVENUES).

CONCLUSIONS . . . LIQUIDITY SHORTAGE

REVENUE CONSTRAINTS HAVE CONTRIBUTED TO A LIQUIDITY SHORTAGE IN THE ELECTRIC UTILITY INDUSTRY. ALTHOUGH ELECTRIC UTILITY RETURN ON SHAREHOLDER EQUITY IS NOT THE LOWEST AMONG THE REGULATED INDUSTRIES, NON-CASH EARNINGS ACCOUNTED FOR AN AVERAGE OF ONE-THIRD OF TOTAL EARNINGS IN RECENT YEARS, RISING TO NEARLY ONE-HALF IN 1981. AS A RESULT, THE INDUSTRY IS HEAVILY DEPENDENT ON THE FINANCIAL MARKETS TO SUPPORT CONSTRUCTION EXPENDITURES

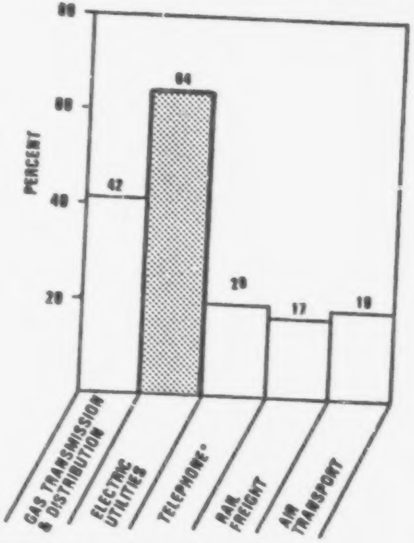
AVERAGE RETURN ON COMMON EQUITY, 1970-1980



*ESTIMATED FROM AT&T

**NET OF DEBT RETIREMENTS

EXTERNAL FINANCING** AS A PROPORTION OF TOTAL CAPITAL EXPENDITURES, 1973-1981



SOURCE: COMPUSTAT, AT&T ANNUAL REPORT

CONCLUSIONS . . . CAPITAL INTENSITY

THE ELECTRIC UTILITY INDUSTRY IS AMONG THE MOST CAPITAL-INTENSIVE OF DOMESTIC INDUSTRIES, COMPOUNDING ITS NEED FOR CASH GENERATION

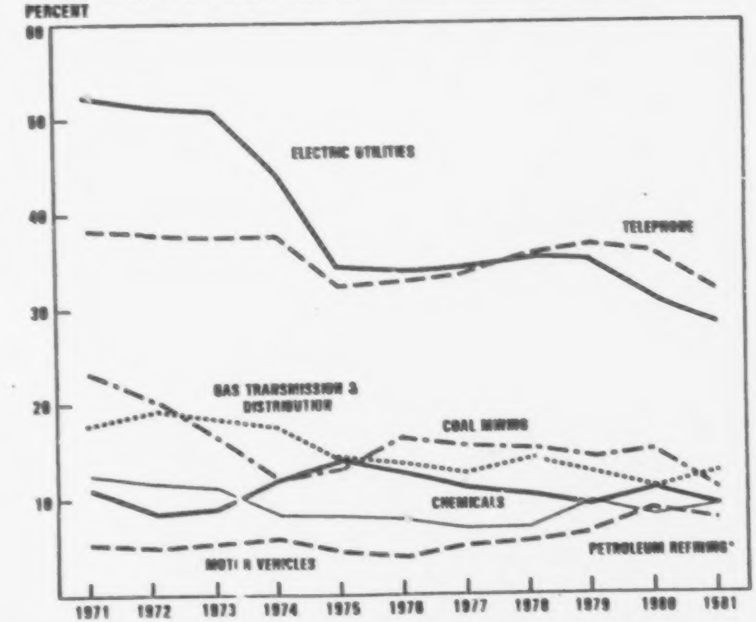
INDUSTRY	ASSETS/ REVENUES	CAPITAL EXPENDITURES/ REVENUES	1981 CAPITAL EXPENDITURES (BILLION $)
ELECTRIC UTILITIES	2.52	0.29	32.3
METAL MINING	2.34	0.21	1.8
TELEPHONE	2.27	0.32	40.5
CEMENT	1.44	0.19	0.8
RAIL TRANSPORT	1.30	0.14	9.1
NON-FERROUS METALS	1.10	0.15	3.2
COAL MINING	1.18	0.10	0.3
HOSPITALS	1.04	0.24	1.8
FARM MACHINERY	0.98	0.05	0.8
CHEMICALS	0.94	0.10	11.8
PHARMACEUTICALS	0.93	0.07	2.9
CONSTRUCTION & MINING EQUIPMENT	0.89	0.10	3.8
GAS TRANSMISSION & DISTRIBUTION	0.86	0.11	11.2
AIR TRANSPORT	0.84	0.14	5.8
IRON AND STEEL	0.83	0.07	5.7
ELECTRICAL MACHINERY	0.83	0.07	4.4
INSTRUMENTS	0.79	0.05	0.8
GLASS CONTAINERS	0.77	0.05	0.4
ENGINES & TURBINES	0.78	0.05	0.8
PETROLEUM REFINING*	0.87	0.19	89.3
RUBBER & PLASTICS	0.66	0.08	1.7
METAL CONTAINERS	0.68	0.06	0.8
SOAPS & TOILETRIES	0.64	0.04	1.4
MOTOR VEHICLES	0.62	0.09	15.1
AIRCRAFT & PARTS	0.60	0.05	2.4
TEXTILES	0.59	0.05	0.8
HOUSEHOLD APPLIANCES	0.58	0.03	0.4
PAINTS	0.58	0.04	0.2
TRUCKING	0.50	0.07	1.2

*INCLUDES EXPLORATION AND PRODUCTION B/ COMPANIES ENGAGED PRIMARILY IN REFINING

SOURCE: COMPUSTAT

CONCLUSIONS . . . CAPITAL REQUIREMENTS

CONSTRAINED PRICES EXPLAIN WHY THE ELECTRIC UTILITY INDUSTRY MUST ALLOCATE A DISPROPORTIONATE SHARE OF THE REVENUE DOLLAR TO SUPPORT SPENDING ON NEW PLANT COMPARED TO OTHER CAPITAL-INTENSIVE INDUSTRIES



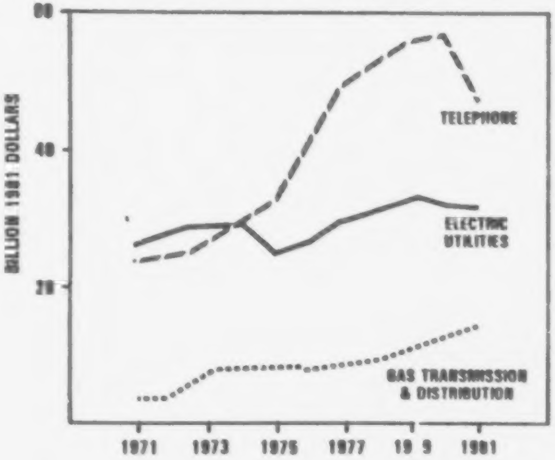
RATIO OF CAPITAL EXPENDITURES TO TOTAL REVENUES

*INCLUDES EXPLORATION AND PRODUCTION & COMPANIES PRIMARILY INVOLVED IN REFINING.
SOURCE: COMPUSTAT

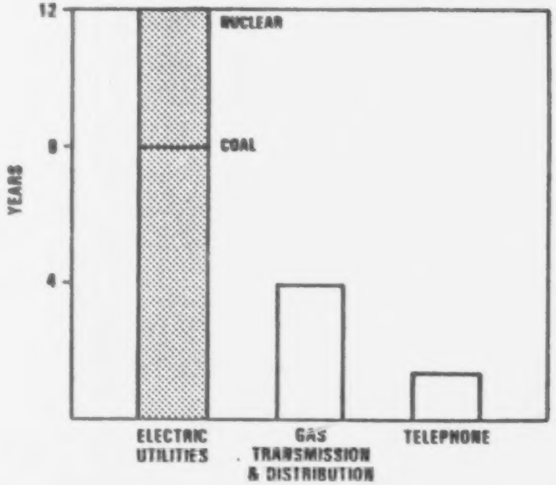
CONCLUSIONS . . . TECHNOLOGY LEAD TIMES

THE UTILITY INDUSTRY'S REGULATORY AND CAPITAL INTENSITY PROBLEMS ARE COMPOUNDED BY THE NATURE OF THE TECHNOLOGIES IN WHICH IT MUST INVEST. FOR EXAMPLE, ALTHOUGH OTHER REGULATED INDUSTRIES REQUIRE LARGE AMOUNTS OF CAPITAL, CONSTRUCTION LEAD TIMES ARE FAR LONGER IN THE ELECTRIC UTILITY INDUSTRY

TOTAL CAPITAL EXPENDITURES, 1971-1981



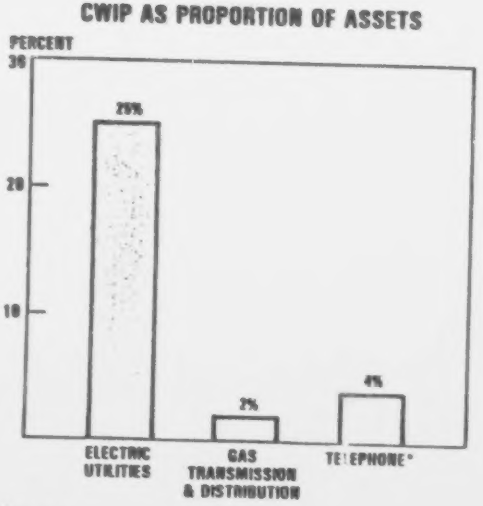
CONSTRUCTION LEAD TIMES, 1981



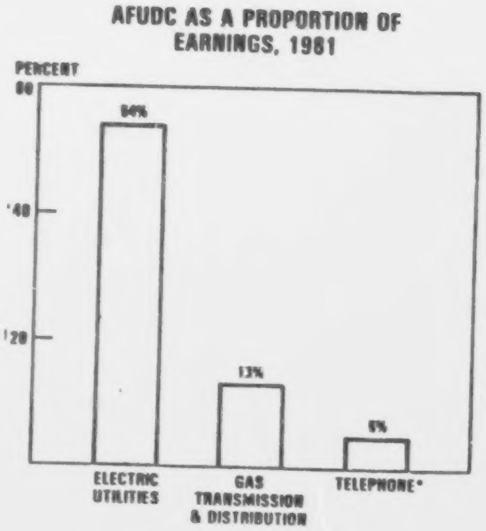
SOURCE: UTILITY COMPUSTAT, BOOZ, ALLEN & HAMILT IN INC.

CONCLUSIONS . . . CONSTRUCTION WORK IN PROGRESS

THESE LONG CONSTRUCTION LEAD TIMES RESULT IN SIGNIFICANTLY LARGER AMOUNTS OF CONSTRUCTION WORK IN PROGRESS (CWIP) IN THE ELECTRIC UTILITY INDUSTRY. BECAUSE REGULATORS TYPICALLY ALLOW LITTLE CASH RETURN ON CWIP, CASH EARNINGS ARE ADVERSELY AFFECTED IF A CONSTRUCTION PROGRAM OF ANY SIGNIFICANCE IS ATTEMPTED



CWIP AS PROPORTION OF ASSETS



AFUDC AS A PROPORTION OF EARNINGS, 1981

*AT&T ONLY

SOURCE: UTILITY COMPUSTAT, AT&T 1981 ANNUAL REPORT

V. IMPLICATIONS

V. IMPLICATIONS

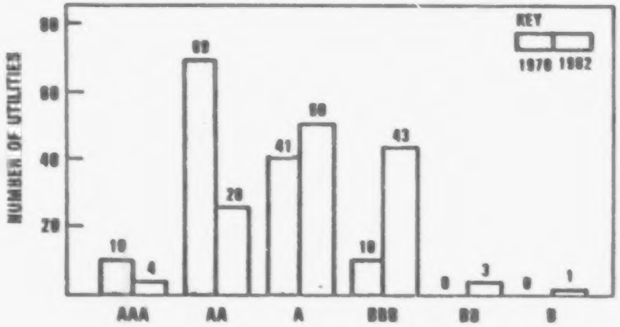
ONLY BY ALLOWING ELECTRIC UTILITIES TO CHARGE A PRICE BASED ON THE TRUE COST OF DOING BUSINESS CAN THE INDUSTRY'S FINANCIAL HEALTH BE IMPROVED, ASSURING ACCESS TO CAPITAL NEEDED TO SUSTAIN A LEVEL OF CAPACITY EXPANSION CONSISTENT WITH GROWTH IN DEMAND

- POOR FINANCIAL PERFORMANCE HAS LOWERED ELECTRIC UTILITY BOND RATINGS AND STOCK PRICES, RESULTING IN A STRONG DISINCENTIVE TO INVEST
- DISINCENTIVES TO INVEST, AND REDUCED DEMAND GROWTH, HAVE CAUSED THE ELECTRIC UTILITY INDUSTRY TO REDUCE ITS CONSTRUCTION SPENDING TO A RATE SUBSTANTIALLY BELOW THAT FOR OTHER ENERGY INDUSTRIES, DESPITE ELECTRICITY'S GROWTH IN ENERGY MARKET SHARE
- AS A RESULT OF THE SCALING BACK OF UTILITY CONSTRUCTION PLANS, THE NET ORDERING RATE FOR NEW POWER PLANT HAS BEEN ZERO OVER THE LAST EIGHT YEARS
- IF NEW CAPACITY IS NOT ORDERED SOON, RESERVE MARGINS AND SERVICE RELIABILITY WILL ALMOST CERTAINLY DETERIORATE. THIS DETERIORATION WOULD BE ACCELERATED BY A STRONG ECONOMIC RECOVERY RESULTING IN HIGHER LOAD GROWTH
- UNLIKE GOODS PRODUCED BY OTHER MANUFACTURING INDUSTRIES, DEMAND FOR ELECTRICITY CANNOT BE SUPPLIED BY IMPORTS. ONLY BY EXPANDING DOMESTIC PRODUCTION CAN ADEQUATE SUPPLY BE ASSURED
- REGULATORY REFORM TO ENCOURAGE PRICING BASED ON THE TRUE COST OF DOING BUSINESS WOULD IMPROVE PROFITABILITY AND PERMIT CAPACITY EXPANSION. THIS APPROACH IS NOT UNPRECEDENTED. SEVERAL OTHER INDUSTRIES RECENTLY HAVE SOUGHT AND OBTAINED RELIEF FROM REGULATION

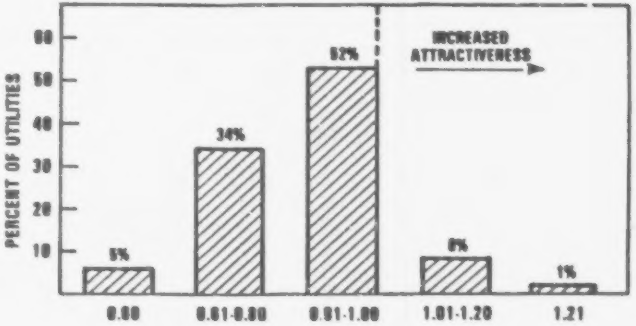
IMPLICATIONS . . . DISINCENTIVES TO INVEST

POOR FINANCIAL PERFORMANCE HAS LOWERED ELECTRIC UTILITY BOND RATINGS AND STOCK PRICES, RESULTING IN A STRONG DISINCENTIVE TO INVEST

DISTRIBUTION OF ELECTRIC UTILITY BOND RATINGS, 1982 VS. 1970



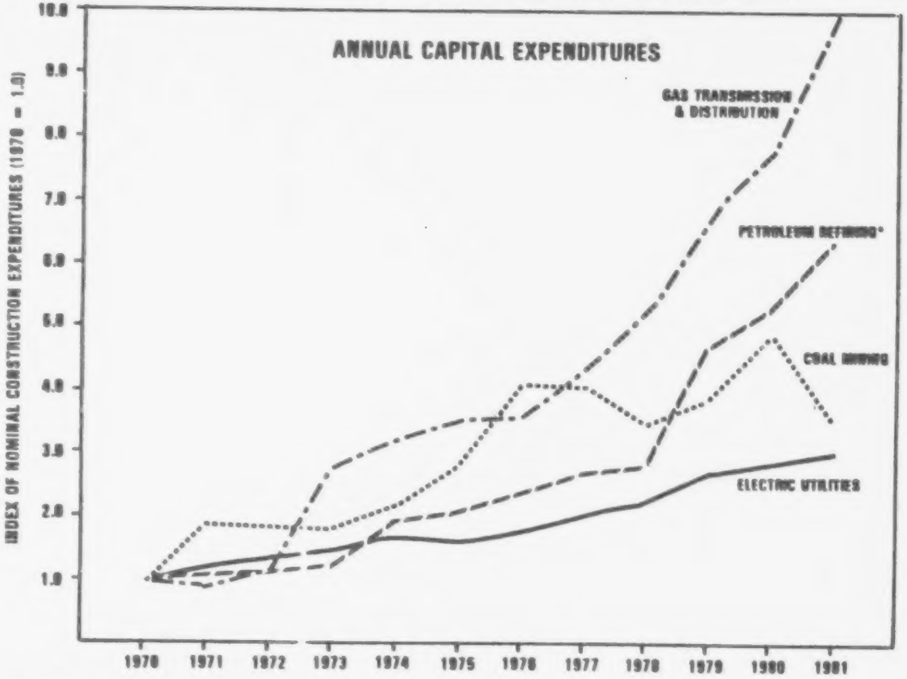
DISTRIBUTION OF RATIO OF MARKET-TO-BOOK VALUE OF ELECTRIC UTILITY STOCKS, JULY 1982



SOURCE: UTILITY COMPUSTAT AND STANDARD AND POOR'S BOND GUIDE (130 UTILITIES RATED IN 1972, 127 In 1982. THE REDUCTION WAS DUE TO CORPORATE REORGANIZATIONS)

IMPLICATIONS . . . CAPITAL EXPENDITURE GROWTH

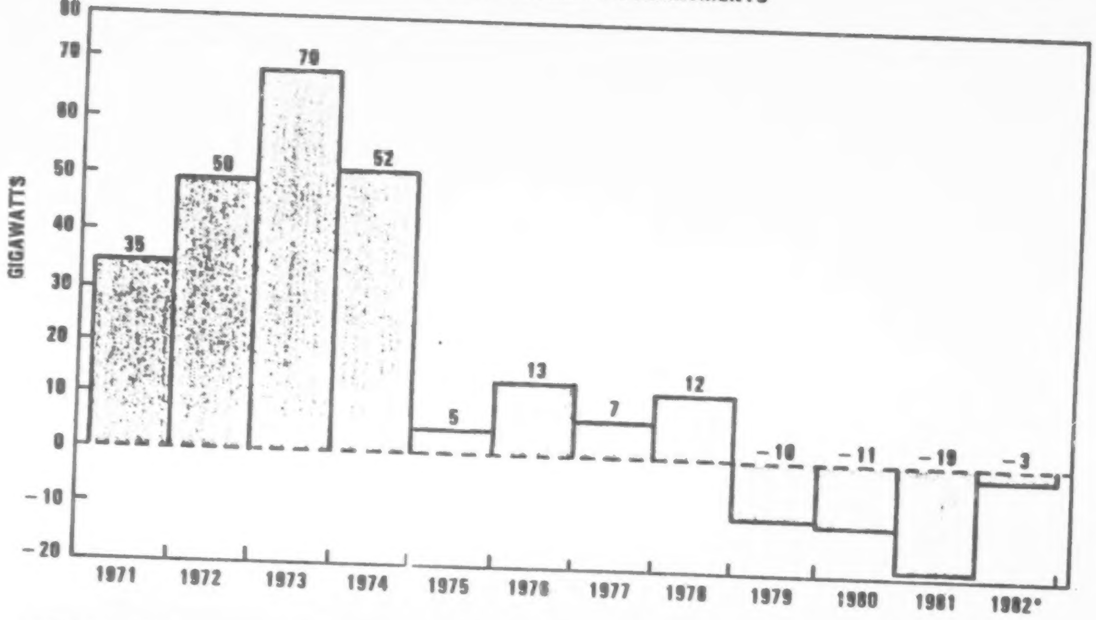
DESPITE ELECTRICITY'S GROWTH IN ENERGY MARKET SHARE, DISINCENTIVES TO INVEST AND REDUCED DEMAND GROWTH, HAVE CAUSED THE ELECTRIC UTILITY INDUSTRY TO REDUCE ITS CONSTRUCTION SPENDING TO A RATE SUBSTANTIALLY BELOW THAT FOR OTHER ENERGY INDUSTRIES.



*INCLUDES EXPLORATION AND PRODUCTION BY COMPANIES PRIMARILY INVOLVED IN REFINING
SOURCE: COMPUSTAT

IMPLICATIONS . . . RECENT TRENDS

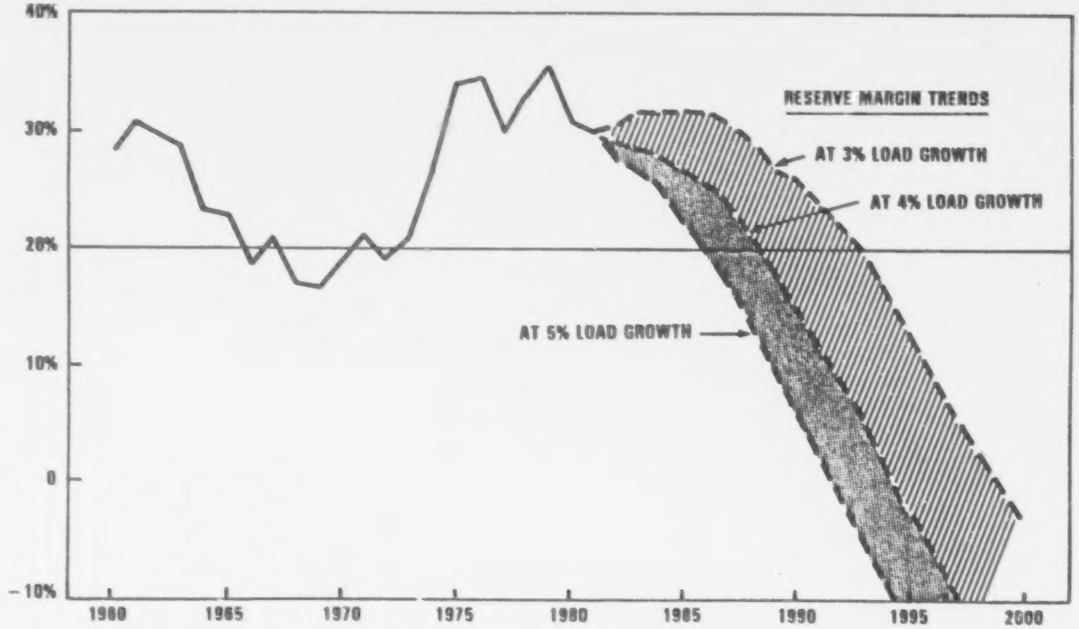
AS A RESULT OF THE SCALING BACK OF UTILITY CONSTRUCTION PLANS, THE NET ORDERING RATE FOR NEW POWER PLANT HAS BEEN ZERO OVER THE LAST EIGHT YEARS


NET NEW CAPACITY COMMITMENTS

*FIRST QUARTER 1982
SOURCE: EDISON ELECTRIC INSTITUTE, ANNUAL ELECTRIC POWER SURVEY

IMPLICATIONS . . . RESERVE MARGINS AND RELIABILITY

IF NEW CAPACITY IS NOT ORDERED SOON, RESERVE MARGINS AND SERVICE RELIABILITY WILL ALMOST CERTAINLY DETERIORATE. THIS DETERIORATION WOULD BE ACCELERATED BY A STRONG ECONOMIC RECOVERY RESULTING IN HIGHER LOAD GROWTH



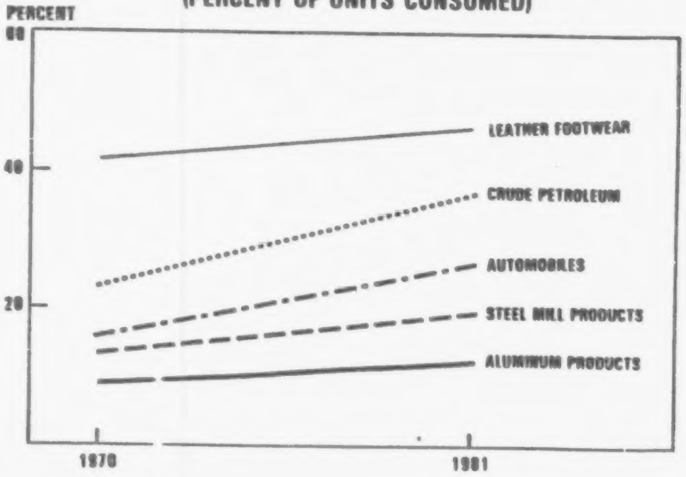
*HISTORICALLY, A NATIONAL RESERVE MARGIN OF APPROXIMATELY 20% HAS BEEN IDENTIFIED AS THAT WHICH IS CONSISTENT WITH RELIABLE ELECTRIC SERVICE. FOR SOME REGIONS A 25% RESERVE MARGIN MAY BE MORE APPROPRIATE, REFLECTING REGIONAL GRID CAPABILITIES AND PEAKING PHENOMENA.

SOURCE: NERC, ELECTRIC POWER SUPPLY AND DEMAND, 1981 1990; EEI, ANNUAL POWER SURVEY, 1980; AND BOOZ, ALLEN & HAMILTON INC.

IMPLICATIONS . . . SUBSTITUTION OF IMPORTS

UNLIKE GOODS PRODUCED BY OTHER MANUFACTURING INDUSTRIES, EXCESS DEMAND FOR ELECTRICITY CANNOT BE SUPPLIED BY IMPORTS. ONLY BY EXPANDING DOMESTIC PRODUCTION CAN ADEQUATE SUPPLY BE ASSURED

IMPORTS AS A PROPORTION OF DOMESTIC CONSUMPTION
(PERCENT OF UNITS CONSUMED)



SOURCE: U.S. DEPARTMENT OF COMMERCE, SURVEY OF CURRENT BUSINESS

IMPLICATIONS . . . REGULATORY REFORM

REGULATORY REFORM TO ENCOURAGE PRICING BASED ON THE TRUE COST OF DOING BUSINESS WOULD IMPROVE PROFITABILITY AND PERMIT CAPACITY EXPANSION. THIS APPROACH IS NOT UNPRECEDENTED. SEVERAL OTHER INDUSTRIES RECENTLY HAVE SOUGHT AND OBTAINED RELIEF FROM REGULATION

INDUSTRY	ACTION
OIL PRODUCTION	DEREGULATION OF OIL PRICES
NATURAL GAS PRODUCTION	PARTIAL DEREGULATION OF GAS PRICES
TELECOMMUNICATIONS	DEREGULATION OF LONG DISTANCE SERVICE; TERMINATION OF LOCAL RATE SUBSIDY BY REVENUES FROM LONG DISTANCE SERVICE
AIR TRANSPORT	DEREGULATION OF ROUTES AND FARES
RAIL FREIGHT	REFORM OF FREIGHT RATES AND CORPORATE MERGER POLICIES

SUMMARY CONCLUSIONS

ELECTRICITY ENJOYS WIDE AND GROWING USE THROUGHOUT THE ECONOMY. HOWEVER, GROWTH OF SUPPLY IS THREATENED IF THE ELECTRIC UTILITY INDUSTRY'S FINANCIAL HEALTH IS NOT RESTORED.

- REGULATION HAS CONSTRAINED GROWTH IN ELECTRICITY PRICES BELOW INCREASES IN THE TRUE COST OF DOING BUSINESS, AND CONTRIBUTED TO DECLINING UTILITY FINANCIAL HEALTH
- DETERIORATING FINANCIAL HEALTH AND REDUCED LOAD GROWTH HAVE CAUSED THE UTILITY INDUSTRY TO SCALE BACK CONSTRUCTION PLANS
- IF NEW CAPACITY IS NOT ORDERED SOON, RESERVE MARGINS AND SERVICE RELIABILITY WILL DETERIORATE
- IN CONSTRAST TO PRODUCTS OF OTHER AILING MANUFACTURING INDUSTRIES, DOMESTIC DEMAND FOR ELECTRICITY CANNOT BE SATISFIED BY IMPORTS. ONLY BY EXPANDING DOMESTIC PRODUCTION CAN ADEQUATE SUPPLY BE ASSURED

ONLY BY ALLOWING ELECTRIC UTILITIES TO CHARGE A PRICE BASED ON THE TRUE COST OF DOING BUSINESS CAN THE INDUSTRY'S FINANCIAL HEALTH BE IMPROVED, ASSURING ACCESS TO CAPITAL NEEDED TO SUSTAIN A LEVEL OF CAPACITY EXPANSION CONSISTENT WITH GROWTH IN DEMAND

APPENDIX A

METHODOLOGY TO DEVELOPING THE SUMMARY MARKET/FINANCIAL COMPARISON CHART

COMPARISON CHART METHODOLOGY

THE METHODOLOGY USED TO CONSTRUCT THE SUMMARY INDUSTRY COMPARISON CHART IS A BLEND OF QUANTITATIVE AND QUALITATIVE ANALYSES

- EACH INDUSTRY'S POSITION ON EITHER THE VERTICAL (MARKET GROWTH) OR HORIZONTAL (FINANCIAL PERFORMANCE) AXIS IS BASED ON ITS PERFORMANCE RELATIVE TO ALL OTHER INDUSTRY'S IN THE COMPARISON GROUP. THE MID POINT OF EACH AXIS REPRESENTS THE PERFORMANCE AVERAGE FOR THE GROUP AS A WHOLE

- REVENUE GROWTH WAS THE PRINCIPAL VARIABLE USED TO DETERMINE MARKET GROWTH PERFORMANCE. FOR INDUSTRIES WHICH HAD APPROXIMATELY EQUAL REVENUE GROWTH, PRODUCTION GROWTH WAS USED TO REFINE EACH INDUSTRY'S RELATIVE POSITION, WITH INDUSTRIES HAVING HIGHER PRODUCTION GROWTH RECEIVING A MORE FAVORABLE MARKET POSITION

- RETURN TO EQUITY (ROE) WAS THE PRINCIPAL VARIABLE USED TO DETERMINE FINANCIAL PERFORMANCE. FOR INDUSTRIES WITH SIMILAR ROE, THOSE HAVING A HIGHER COMMON STOCK MARKET-TO-BOOK RATIO WERE GIVEN A MORE FAVORABLE POSITION. FOR INDUSTRIES HAVING A SIMILAR ROE AND MARKET-TO-BOOK RATIO, THOSE HAVING A HIGHER DEBT INTEREST COVERAGE RATIO WERE GIVEN A MORE FAVORABLE POSITION ON THE HORIZONTAL AXIS.

APPENDIX B

AN EXPLANATION OF THE CHOICE OF TIME PERIODS FOR THE MARKET AND FINANCIAL ANALYSIS

TIME PERIOD RATIONALE

FOR THE MOST SIGNIFICANT MARKET AND FINANCIAL PERFORMANCE VARIABLES, THE 1970 TO 1980 TIME PERIOD WAS CHOSEN FOR ANALYSIS. IT REPRESENTS RECENT ECONOMIC TRENDS, BUT IS MORE THAN A SNAPSHOT IN TIME WHICH MAY BE DISTORTED BY TEMPORARY DEVELOPMENTS ASSOCIATED WITH THE BUSINESS CYCLE

- MARKET PERFORMANCE FOR THE 1970-1980 TIME PERIOD REFLECTS THE BOOM PERIODS ASSOCIATED WITH THE EARLY AND LATE 1970'S, AS WELL AS THE RECESSIONARY PERIODS OF THE VERY EARLY 70'S, THE MID 70'S AND THE VERY LATE 70'S
- RETURN TO EQUITY, WHICH TENDS TO VARY DRAMATICALLY DEPENDING ON CURRENT BUSINESS CONDITIONS, WAS ALSO CALCULATED ON AN AVERAGE BASIS FOR THE ENTIRE 1970-1980 TIME PERIOD
- COMMON STOCK MARKET-TO-BOOK RATIO REPRESENTS THE AVERAGE FOR THE YEAR 1981. A SNAPSHOT FOR THE VARIABLE WAS CHOSEN BECAUSE STOCK PRICES TEND TO REFLECT NOT ONLY PAST PERFORMANCE, BUT FUTURE EXPECTATIONS AS WELL
- DEBT INTEREST COVERAGE TENDS TO BE A FAIRLY STABLE MEASURE, AND RATING AGENCIES AND INVESTORS FOCUS ON CURRENT OR EXPECTED CHANGES TO THE RATIO, RATHER THAN PAST PERFORMANCE

3. The proponents of the pending CWIP bills claim that including CWIP in the rate base will transfer, from investor to ratepayer, the risk that a generating plant under construction will be abandoned before completion. Judging from recent news reports about the financing problems facing certain utilities attempting to complete nuclear plants, it would appear that CWIP in rate base could substantially reduce the risk of plant abandonment. Please provide a detailed comment.

Inclusion of CWIP does not transfer the financial risks of plant cancellation from shareholder to ratepayer. Inclusion of CWIP in rate base affects only the timing of recovery of the financing charges on capital invested in new construction. Investors still provide all necessary capital and recovery of the principal by investors is still achieved via depreciation charges after the plant is in service. With specific regard to cancellation, the investor always remains at risk for recovery of both his investment and a return on that investment.

FERC's policy regarding cancelled projects precludes utilities from recovering any cancelled project costs that were not prudently incurred. A utility must prove the prudence of all costs incurred in its construction project before recovery of a cancelled project's cost will be permitted by FERC. If the utility meets this burden of proof, FERC nevertheless requires investors to bear a portion of the cancelled project's costs, under a policy which was in effect before the final rule on CWIP. This policy is separate from FERC's policy on CWIP, and has not been changed by FERC's new rules on CWIP.

The primary difference between CWIP and No-CWIP policies, in terms of project cancellation, is the timing of the recovery of prudently incurred financing costs. The financing costs on construction capital, if prudent, are recoverable before cancellation under a policy of including CWIP in rate base, and they are recoverable after cancellation under a no-CWIP policy. In other words, the total dollars from ratepayers for a cancelled project are the same under CWIP and no-CWIP policy.

One feature of FERC's rule gives ratepayers additional protection: the requirement that a utility prove the prudence of its investment in a project before it can be allowed to include CWIP in its rate base for the project. If a utility fails to prove prudence at this point, it could not later recover those costs if the project was thereafter cancelled. These prudency determinations in rate cases, which FERC has introduced into federal electric ratemaking for the first time with this order, restrict post-cancellation prudency determinations to costs incurred between the last rate case and the cancellation. If a utility were found to have made imprudent expenditures during this interval, and to have earned a return on them, the proper remedy - one well within FERC's power - is disallowance of recovery of a corresponding portion of the project's costs.

Inclusion of CWIP in rate base will substantially reduce, but not eliminate, the risks that a plant will be cancelled. If CWIP is included in rate base, a utility will be able to finance its construction program on more reasonable terms. Further, inclusion of CWIP in rate base will provide a utility with cash earnings rather than paper earnings. Earnings in the form of cash not only reduces capital costs and improves capital availability; but such earnings can be directly invested in plant and thereby reduce the amounts that must be obtained in the capital markets.

4. A number of partially completed generating plants recently have been abandoned, or their continuing construction has been indefinitely postponed. How have state and federal regulatory authorities allocated the costs of those plants between ratepayers and investors?

A principal issue in regulatory proceedings regarding cancelled plants is whether the decision to build, and later to cancel a facility was prudent when made. FERC and state commissions will not permit a utility to recover imprudently incurred costs.

The method of recovery of prudently incurred sunk costs varies among regulatory jurisdictions. The most common method adopted by commissions is to allow the utility partial recovery, thereby allocating the risks between investors and ratepayers. In cases employing this method, the utility usually is allowed to amortize its entire sunk cost, but is not allowed to earn a return on the unamortized balance by including it in rate base. Several commissions allow full cost recovery by allowing rate base inclusion of the unamortized balance. Other commissions deny recovery of all or a significant portion of the sunk costs. Where a commission does not allow a return on the unamortized balance of the sunk costs, the investor gets only a partial return on his investment, because of the time value of money. The longer the amortization period, the more severe the penalty the investor incurs.

A more detailed discussion of the regulatory treatment afforded cancelled plants is provided in the two accompanying EEI publications, Regulatory Treatment of Cancelled Plants (published in December 1982) and Regulatory Treatment of Cancelled Plants: Survey Update of Cases in 1983. These surveys summarize most regulatory and judicial decisions regarding generating plant cancellations and the regulatory treatment of the sunk cost investment in those plants through the end of 1983. The only major cancellation decision to date in 1984 concerns Virginia Electric & Power Company's North Anna No. 3 facility. In this decision, the Virginia commission allowed amortization of the sunk costs over 15 years and it did not allow a return on the unamortized balance.

The widely-publicized recent situations do not involve cancellation decisions, but concern indefinite postponements of construction. Cost recovery may become an issue in those cases if there is a decision to cancel the plants under review.

special report

A Special Report to Members from the Rate Regulation Department

No. 3: December 10, 1982

Regulatory Treatment of Cancelled Plants

This is the third in a series of Special Reports prepared by EEI's Rate Regulation Department and Utility Regulatory Analysis Program. This Report is on cancelled generating plants.

Cancellation of planned generating plants has been a frequent occurrence for the electric utility industry in the last several years. The reasons for the large number of cancellations are complex and varied, including the high costs of construction, licensing and environmental requirements, lower than expected load growth as a result of fuel price increases and sluggish economic growth, and the poor financial health of the industry.

The focus of this report, however, is on the regulatory treatment accorded companies which are forced to cancel new plant. The report includes case summaries of approximately 40 plant cancellations and specifically focuses on the methods used by commissions in the treatment of sunk cost recovery and associated issues. These issues are critically important to the industry, because they affect the quality of service provided and the industry's ability to raise capital to build new plants.

Section I—Introduction

In the last few years, there have been an unprecedented number of cancellations of planned electric generating facilities. The vast majority of these plants have been large, baseload facilities, fired with coal or nuclear fuel. In addition, many utilities have announced plans to defer construction of new plants, delaying the in-service dates of these plants.*

The importance of the large number of plant cancellations to the electric utility industry, and to the nation's economy, is best understood when viewed in the context of why utilities build baseload plant. They do so for essentially two reasons: to meet their obligation to provide adequate and reliable electric service and to reduce the present value of revenue requirements, i.e., the ultimate cost of electricity to consumers.

Constructing new generating plants can help assure service because older, less efficient plants can be retired or operated at lower capacity factors, and can help reduce revenue requirements by displacing use of expensive fuels (oil and gas). The implications of the plant cancellations are that there may be capacity shortfalls in some areas of the country, and the industry will be increasingly reliant on oil and gas generation.

The large number of plant cancellations cause two problems—one in the short run and one in the long run. The short run problem is that some utilities are threatened with not recovering the total investment in plants which have been cancelled. The investments were made for engineering studies, site planning, and in some cases, on-site construction of the plants.

It is critically important for companies to recover these investment costs; otherwise, the losses could cause a severe strain on the companies' cash flow and ability to access capital markets, in the short run, at reasonable cost.

The long run problem is more complex. It involves the companies' ability to access capital markets at reasonable rates in the long run, and the prospect of energy shortages in some parts of the country because needed capacity is not being built.

The companies' ability to finance future construction (which would replace the cancelled plants) may be dependent to a large extent on the regulatory treatment accorded the costs of cancelled plants. If investors perceive increased risks associated with financing new construction as a result of the regulatory environment, then financing costs—which are ultimately borne by the ratepayer—will increase.

The purpose of this report is to document the different ways in which regulatory commissions have treated the recovery of sunk cost investments in cancelled plants, rather than to examine in detail the reasons for, and problems caused by, plant cancellations.

The report examines commission orders in which plant cancellation was an issue. Table 1 shows information on the cancellation cases which have been included in the survey; it is organized on a company by company basis. Table 2 shows cancellation cases which are currently pending before commissions, and Table 3 shows the cost recovery allowed, and the rationale used, by the various commissions. Cases shown in the tables are only those for which a company has petitioned its commission for recovery of sunk costs, and may not be an exhaustive list.

As shown in Table 1, this study surveyed approximately 40 plant cancellation cases. The regulatory

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*Note, however, that the reasons for and regulatory treatment of plant deferrals are outside the scope of this report.

EDISON ELECTRIC INSTITUTE The association of electric companies

treatment accorded the companies falls into one of three broad categories: no cost recovery allowed, cost recovery allowed with earned return on the unamortized balance, and cost recovery allowed with no return on the unamortized balance. Some of the important principles commissions used to reach a decision, and some of the actual decisions, are summarized in Sections II and III of this report.

In addition to the basic issues of cost recovery and treatment of the unamortized balance, commissions have considered other issues associated with the plant cancellations, including: the amortization period, the disposition of AFUDC accounts for the cancelled plants, and the regulatory treatment of tax losses. These are discussed in Section IV of this report.

Section II—Ratemaking Principles

When a plant is cancelled and the participating utilities petition for recovery of sunk costs, one or more commissions must decide on regulatory treatment of the costs involved.

Some of the issues involved are novel to utility ratemaking; commissions have found that the application of traditional principles from other aspects of utility regulation (e.g. the regulatory treatment of extraordinary losses) are not relevant and have been forced to break new ground. Thus, it is not surprising that commissions have treated cost recovery differently. Indeed, in some instances, the same commission has arrived at different results in different cases.

Commissions did, however, examine some common principles before determining actual treatment of the cancelled plants. Some of those principles include preemption, prudence, risk sharing, and allocation among jurisdictions.

Preemption

There are two reasons a state regulatory commission may be preempted from choosing a given method of treating cancellation costs. First, state law may be interpreted to preclude cost recovery. The Wyoming and Oregon commissions have interpreted their states' statutes to dictate this result. The Ohio Supreme Court, reversing the Ohio commission, held that state law precluded the commission from allowing cost recovery. The Indiana commission has interpreted Indiana law to permit amortization of the write-off but to preclude inclusion of the unamortized balance in rate base.

The other reason for preemption is the Supremacy Clause of the U.S. Constitution. Some state courts have interpreted this clause to bar state commissions from collaterally questioning the justness and reasonableness of rates set by a federal agency. This principles was used in litigation involving one major cancellation—Northern States Power Company's Tyrone plant. The Tyrone case is discussed extensively in Section III.

Prudence of Decisions

Most commissions have focused on whether the decisions to build, and later to cancel, a plant were prudent when made. This is an important point since a utility, unlike an unregulated business, has an obligation to provide service. A utility cannot phase out of the utility business, nor can it adopt a strategy of waiting to see whether demand develops before it commits to building additional plant.

It is obligated to have capacity available to provide service and, with the long lead-time needed to construct plant (especially large base load plants), a utility has little choice other than to commit to building new plant on the basis of available forecasts of future demand and construction costs. In recognition of the obligation to serve, most commissions have therefore looked at whether a utility's decisions were all prudent when made.

Commissions also addressed the prudence of the cancellation date to determine whether the plant was cancelled when information became available to support that decision. Several commissions found that costs incurred after a specified date were imprudent and disallowed recovery of those costs.

The criterion of whether the cancelled plant is "used and useful" for providing service to customers was not the basis for most commission decisions on cost recovery, although some commissions have used this principle as a rationale for denying cost recovery. Other commissions have explicitly recognized that investments made in plants—even plants which are subsequently cancelled—constitute assets which are "used and useful."

Risk Sharing

If a threshold determination is made that a utility's actions were prudent up to a certain point in time, commissions have considered various policy questions relating to risk sharing and risk allocation. Some commissions have decided that it is equitable for the risks of the enterprise to be shared between stockholders and ratepayers, and, accordingly, allowed only partial recovery of sunk costs.

To ease the burden on ratepayers, some commissions may have diminished cost recovery, lengthened the amortization period or disallowed the unamortized balance in rate base. Conversely, concerns for the financial health of the utility, and for protection of other portions of its construction program which the commission has deemed to be necessary for future adequacy of power supply, have caused some commissions to increase, or to hasten, cost recovery.

Allocation Among Jurisdictions

For utilities which operate in more than one jurisdiction, costs associated with cancelled plants must be allocated between the jurisdictions. Under these circumstances a commission has usually allocated the cancellation costs in the same way that it allocates other capacity related costs. In most instances, some measure of the relative demand of customers in each jurisdiction has been used as a basis for capacity cost allocation. This situation can arise either between state commissions, or between FERC and one or more state commissions.

Section III—Commission Decisions

Section VI includes brief summaries of the approximately 40 cancellation cases surveyed. This Section, however, provides an overview of some of the various cost recovery methods approved by commissions and courts. These methods fall into three broad categories:

- no cost recovery allowed,
- cost recovery allowed with earned return on unamortized balance, and
- cost recovery allowed with no return on unamortized balance.

Under a no cost recovery scheme, the affected utility's shareholders bear the burden of the loss, paying the sunk costs and also losing the expected return on funds invested. Under the full recovery scheme, ratepayers bear the burden. When cost recovery is allowed with no return on the unamortized balance, the burden is shared: ratepayers pay the sunk costs through rates and shareholders do not earn a return on funds invested.

No Cost Recovery Allowed

Of the commission orders examined, there have been seven cases in which utilities have not been able to recover any—or even a small portion—of the sunk costs in a cancelled plant.

The most noteworthy case was the cancellation of the Davis Besse and Erie plants by CAPCO, a consortium of Ohio utilities. The Ohio Public Utilities Commission initially allowed the utilities to recover costs associated with the plants which were cancelled. The Ohio Supreme Court overturned that decision, ruling that Ohio state law does not allow cost recovery.

The court acknowledged that numerous precedents existed in other jurisdictions which supported the view that utilities may recover prudently incurred costs. It ruled, however, that a narrow reading of Ohio statutes does not allow extraordinary costs, such as cancellation costs, to be included in the test year for ratemaking purposes. The court viewed the costs of a cancelled plant as not being "used and useful" and, further, refused to apply the "direct, primary benefit" test on which it relied in disallowing institutional advertising expenses and charitable contributions. The court's opinion also implied that write-off of capitalized costs constituted retroactive ratemaking.

A similar case involved Pacific Power & Light's petition to the Oregon commissioner to recover sunk costs associated with the cancelled Pebble Springs and WPPSS 5 plants. The commissioner interpreted an Oregon statute, which forbids inclusion of CWIP in rate base, to bar recovery. He read the statute broadly "to exclude all costs of ventures which never reach fruition."

He ordered instead that the after tax loss associated with the cancelled plants be offset by extraordinary gains from a debt/equity swap and from a tax benefit sale. An Oregon consumer organization appealed the offset portion of the case, alleging that it evades the mandate of the state statute.

The Wyoming Commission recently denied PP&L's request to recover the Wyoming jurisdictional share of its investments in Pebble Springs and WPPSS 5. The PSC based its ruling on its interpretation of Wyoming statutes that forbid rate base inclusion of capital investments which are not yet "used and useful."

The cancellation of Northern States Power Company's Tyrone plant has produced commission decisions in three states which indirectly preclude recovery of cancelled plant costs. These decisions were based on a refusal to recognize, as operating expenses, costs payable to another utility pursuant to an interchange agreement under FERC jurisdiction.

Northern States Power Company (Minnesota), or NSP (Minn), provides retail electric service in Minnesota, North Dakota, and South Dakota. To satisfy the requirements of Wisconsin law, a wholly owned subsidiary corporation, Northern States Power Company (Wisconsin), or NSP (Wis), provides retail electric service in Wisconsin.

The two utilities plan, operate, and share the costs of their respective power supply facilities on a single system basis under a Coordinating Agreement. This agreement is filed with the FERC as a rate schedule under the Federal Power Act.

—Text—Continued on page 6

Table 1
Cancelled Plants:
Commission Decisions on Recovery of Sunk Costs

	Cancelled Plant					Commission Decision			
						Cost Recovery Allowed			No Cost Recovery
Company	Name of Plant	Fuel Type	Capacity (MW)	Sunk Cost (Millions)	Commission	No Return	Earned Return	Amortization (years)	
Arizona Public Service	Palo Verde 4 & 5	N	1359 each	—	Az			—	X
Boston Edison	Pilgrim 2	N	1216	$278.3[*]	Mass		X	13	
Carolina Power & Light	South River	N	1150	$7.0 $2.0	N.C. S.C.	 X	X	5 10	
Carolina Power & Light	Shearon Harris 3 & 4	N	900 each	$92.0	N.C.		X[1]	10	
Central Maine	Sears Island	N	1186	$4.7[*]	Maine	X		5	
Central Maine	Montague	N	1245	$1.6[*]	Maine	X		5	
Central Vermont	Montague	N	1245	$0.8	Vt	X		5	
Central Vermont	Pilgrim 2	N	1216	$8.2	Vt	X		10	
Cleveland Electric[2]	Davis Besse 2 & 3 Erie 1 & 2	N N	914 each 1280 each	$56.4 (total)	Ohio[2]			—	X[2]
Commonwealth Electric	Pilgrim 2 Montague	N N	1216 1245	$10.0 (total)	Mass	X X		2 3	
Connecticut L&P et. al	Montague	N	1245	$5.3 (total)	Conn	X		3	
Dayton P&L	Killen 1	F	613	$4.5	Ohio			—	X[3]
Detroit Edison	Fermi 3	N	—	$6.8	Mich	X		10	
Gulf Power	Caryville	F	500	$12.0	Fla		X[4]	5	
Gulf States	Blue Hills	N	949	$12.5	La		X	10	
Houston L&P	Allens Creek 2	N	1150	$1.4	Texas	X		5	
Idaho Power	Pioneer 1 & 2	F	511 each	$2.5[5]	Idaho			—	X
Jersey Central P&L	Forked River	N	1100	$394.5[*]	N.J.	X		15	
New England Power	Salem Harbor 5	F	880	$12.9	FERC	X[6]		5	
New England Power	NEP 1 & 2	N	—	$30.6	FERC	X		5	
Northern Indiana PS	Bailly	N	—	$190.7	Ind	X		15	
Northern States Power	Sherco 4	F	809	—	Minn	X		3	
Northern States Power[7]	Tyrone	N	1192	$67.0 — $10.9 — —	FERC Wisc Minn N.D. S.D.	X X		10 5 — — —	 X X X
Pacific P&L	Pebble Springs WPPSS 5	N N	1303 1316	$109.6 (total) $32.0	Ore Wyo			— —	X[8] X
Potomac Electric Power	Douglas Point	N	1206	$66.0 — —	D.C. Md Va	 X X	X[9]	10 10 10	
Potomac Electric Power	Dickerson	F	828	$85.0 —	Md Va	X X		10 10	
PS of Oklahoma	Black Fox	N	1180	$280.0	Okla		X[10]	10	
Public Service E&G	Atlantic	N	1211	$301.3[*]	N.J.	X		20	
Public Service E&G	Hope Creek	N	1118	$370.0	N.J.	X		15[11]	
Rochester G&E[12]	Sterling	N	—	$121.1 (total)	N.Y.		X	3-10[12]	
San Diego G&E	Sundesert	N	985	$90.3[*]	Cal	X		5	
Southern California Edison	Vidal	N	—	$0.9	FERC			—	X[13]
Virginia Electric	Surry 3 & 4	N	934 each	$66.1	Va	X		10	
Virginia Electric	North Anna 4	N	955	$130.0 — —	Va N.C. W. Va	X X	 X	10 10 20	
Wisconsin Electric et. al	Haven	N	952	$36.3	Wisc		X	3	

Table 2
Cancelled Plants:
Cases Pending Before Commissions

Company	Name of Plant	Fuel Type	Capacity (MW)	Sunk Cost (Millions)	Commission
Carolina P&L	Shearon Harris 3 & 4	N	900 each	$40.0	S.C.
Consolidated Edison	Cornwall	Pumped Storage	2000	$49.8	N.Y.
Detroit Edison	Greenwood 2 & 3	N	1297 each	$70.0	Mich.
Duke Power	Perkins 1, 2 & 3	N	1341 each	$5.2 $5.0	N.C. S.C.
Houston L&P	Allen's Creek 1	N	1130	$362.0	Texas
New York State E&G[1]	New Haven 1 & 2	N	1233 each	$79.0 (total)	N.Y.[2]
Portland General Electric	Pebble Springs	N	1309	$132.0	Ore.
Potomac Electric Power	Dickerson	F	828		D.C.
Southern California Edison	[3]	—	—	$49.7[3]	Cal.[4]
Union Electric	Callaway 2	N	1192	— —	Ill. FERC

Notes
Table 1

Note: Sunk cost is the jurisdictional amount. (*) indicates that a portion of AFUDC disallowed from recovered amount.

[1] Earned return only on interest expense on long-term debt.

[2] Ohio PUC originally allowed cost recovery, but decision reversed by Ohio Supreme Court. Decision also applies to Ohio Edison petition for cost recovery.

[3] Ohio PUC decision predicated on previous Ohio Supreme Court ruling in Cleveland Electric case.

[4] Florida PSC decision upheld by Florida Supreme Court.

[5] Net loss after sale of Pioneer boiler.

[6] FERC decision disallowing unamortized balance in rate base was unsuccessfully appealed by New England Power to U.S. Court of Appeals and U.S. Supreme Court.

[7] The FERC allocation of charges, which was challenged by the South Dakota and Minnesota commissions, was upheld by the 8th U.S. Circuit Court of Appeals in October, 1982. Northern States Power (Minnesota) appealed commission decisions disallowing cost recovery in all three states: Minnesota appeal is pending; North Dakota commission decision reversed; and South Dakota commission decision reversed, pending further appeal by South Dakota commission.

[8] Oregon commissioner interpreted state statute as prohibiting amortization of loss on cancelled plants. Extraordinary loss on plants offset by extraordinary gains.

[9] Net gain, resulting from sale of uranium contracts, included in rate base.

[10] Return allowed on debt and preferred equity portion.

[11] Accelerated amortization schedule allowed by New Jersey Board of Public Utilities.

[12] Also, Niagara Mohawk, Central Hudson and Orange & Rockland. Amortization schedule: RG&E—5 years; NM—3 years; CH—5 years; O&R—10 years.

[13] FERC decision upheld by U.S. Court of Appeals.

Notes
Table 2

[1] Also, Long Island Lighting.

[2] Recommended decision by ALJ to permit both companies to recover costs and earn a return on the unamortized balance has not been acted on yet by N.Y. Commission.

[3] Southern California Edison has had losses of $49.7 million (1972-1981) associated with abandoned generating and other plant, of which, only 20% has been recovered by the company as a result of petitions to the California Commission; SCE is not petitioning for recovery of residual losses.

[4] California Commission is considering request by SCE to establish procedure for recovery of prudent sunk costs of cancelled projects in the future.

special report

The Tyrone plant was to be a 1,200 MW nuclear facility in Wisconsin. Because the Wisconsin commission had held that only a Wisconsin corporation could own a generating plant in Wisconsin, the NSP system's entire 68% share of the project was owned by NSP (Wis). The Wisconsin commission eventually refused to grant certification for the plant and ordered expenditures stopped; therefore NSP abandoned the project.

In hearings before the Wisconsin commission, NSP (Wis) was given permission to amortize the costs associated with the cancellation but was not allowed to earn a return on the unamortized balance.

NSP (Minn) and NSP (Wis) decided to write off the estimated $75,000,000 losses on Tyrone across the system, in proportion to their respective shares of total system load. To accomplish this, they filed with FERC an amendment to their Coordinating Agreement specifically authorizing the write-off, its period, and other terms. FERC accepted the amendment for filing, and it went into effect subject to refund, pending final FERC action. The Minnesota, North Dakota and South Dakota commissions all intervened in the FERC proceeding, vigorously opposing the amendment.

NSP (Minn) began to pay its share of the abandonment losses to NSP (Wis) under the assessment and included the jurisdictional portions of these costs, together with other costs under the agreement, as part of its cost of service in Minnesota, North Dakota, and South Dakota.

Of the three commissions, Minnesota and North Dakota initially refused outright to allow cost recovery, and South Dakota has twice deferred consideration, refusing to allow recovery pending "a final order of the FERC no longer subject to judicial review." According to the Minnesota commission, Minnesota ratepayers should not be required to pay costs of a plant which was needed to provide them service, but which was cancelled as a result of the "parochial" action of the Wisconsin commission.*

North Dakota also denied permission to recover the Tyrone costs primarily because the cancellation was caused by the Wisconsin commission.

NSP (Minn) appealed the decisions in all three states. The Minnesota appeal is pending.

In North Dakota, the state's Supreme Court reversed the North Dakota commission in December, 1981. The court found that the charges passing between NSP (Minn) and NSP (Wis) under the Coordinating Agreement were federally regulated wholesale charges, and that the commission, because of federal preemption under the U.S. Constitution's Supremacy Clause, cannot "indirectly assert jurisdiction over the wholesale rates by investigating the reasonableness of underlying costs in a proceeding involving retail rates." Therefore, the commission was required to treat NSP's filed interstate wholesale rates as a reasonable operating expense.

In Minnesota and South Dakota, a lower courts have issued orders in accord with North Dakota's. The commissions have appealed the decisions to the state supreme court. The appeals are pending.

FERC issued a final decision on the Coordinating Agreement in December, 1981, just before the North Dakota Supreme Court decision. It allowed the abandonment costs to be recovered through the agreement, but lengthened the amortization period to 10 years. The Minnesota and South Dakota commissions appealed to the U.S. Court of Appeals for the 8th Circuit, which affirmed FERC's decision in October 1982.

In a similar case, the Arizona Commission denied the Arizona Public Service Company permission to include in rates costs associated with the cancelled Palo Verde Units 4 and 5. The commission used reasoning similar to that used by the Minnesota and North Dakota commissions in the Tyrone case.

In yet another case, FERC decided Southern California Edison Company could not include in its rates costs associated with the cancelled Vidal nuclear plant. In its opinion, FERC stated:

> "... there are two issues with which we are concerned. First, the company must prove that the abandonment was prudent. Having established this, we are then concerned with whether it is an atypical expense that should not be perpetuated in the company's test year cost of service." (Docket No. ER 76-205, Opinion No. 62, issued 8/22/79.)

FERC upheld the finding of the administrative law judge that the company had not met its burden of proof to present specific evidence that cancelling the project was prudent. In the same case, however, the commission allowed recovery of costs associated with the cancelled Huntington Beach project because the prudence of the cancellation was not in dispute. Significantly, the commission also found that write-off of abandoned projects is not an atypical expense in the electric utility industry and, therefore, should reasobly be included in the test year expense.

These cases point out that only three commissions have rejected the principles that a utility *should be*

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*In the same case, the Minnesota commission allowed NSP to recover costs associated with abandonment of Sherco Unit No. 4.

allowed to recover costs associated with cancelled plants, as long as the costs were prudent when incurred and the cancellation decision was prudent. The Arizona, Minnesota and North Dakota commissions disallowed cost recovery in their jurisdictions because they objected to cancellation decisions made by commissions in other jurisdictions. In the Ohio case, the commission supported the principle of cost recovery, but was overruled by the state Supreme Court.

Cost Recovery Allowed With Earned Return on Unamortized Balance

At the other end of the spectrum of possible treatments, a number of commissions have allowed full recovery of costs incurred on cancelled or abandoned plants, with the unamortized balance included in rate base. Commissions in Wisconsin, Florida, Louisiana, the District of Columbia, New York, Massachusetts, and North Carolina have allowed this treatment.

In New York, the PSC had special hearings on the treatment of sunk costs associated with the cancelled Sterling project. Phase I of the hearing examined whether the utilities which sponsored the project had acted prudently in the planning and decision to cancel. Costs incurred on the project prior to January 11, 1978 were found to be prudent in this phase and, in Phase II, costs incurred subsequent to that date were also found to be prudent.

Phase I-A examined the merits of a proposal to allocate the Sterling costs between ratepayers and investors in proportion to the benefits each group would have derived from the project. The commission rejected this proposal as being contrary to its established practice of allowing full recovery of sunk costs, including carrying charges. Because the utility's obligation to serve has a significant impact on management construction decisions, the New York commission did not view the plant as a joint venture between ratepayers and shareholders.

The commission went on to say that even if it were willing to take a "comparative benefits" approach to the case, no rigorous analysis had been presented to show the magnitude of the relative benefits. In addition, the commission concluded that:

> "Given the fuel savings associated with the Sterling unit—which would have been passed through to ratepayers—and given the rather oppressive financial burden imposed on the companies in completing the facility, it is difficult to envision any benefits accruing to the shareholders, much less benefits approaching those of the ratepayer." (New York PSC Opinion No. 82-1, issued 1/13/82).

The Wisconsin commission has also allowed full amortization of plant cancellation costs and inclusion in rate base of the unamortized balance. As an incentive for a group of Wisconsin utilities to abandon the Haven nuclear plant, the commission announced in advance that it would allow recovery of the sunk costs if the utilities would cancel the plant.* If the project was not cancelled, the commission announced that additional precertification expenditures would be treated as operating expenses rather than being capitalized, thereby denying the companies a return on the costs.

The commission also stated that if the utilities cancelled the project within 30 days, the unamortized balance would be included in rate base. However, if the utilities continued to pursue their application for certification, they would not be allowed to earn a return on the unamortized balance in the event the project was subsequently abandoned. The utilities responded by cancelling the plant within 30 days.

The District of Columbia Public Service Commission agreed with the principle that a utility should be allowed to recover sunk costs when it allowed Potomac Electric Power Company to amortize, over 10 years, the costs of the abandoned Douglas Point plant. However, a large gain on the sale of uranium contracts resulted in a net gain on the abandonment, which meant that amortization of the credit reduced the rate charged to customers.

In two separate cases, involving South River and Harris Units 3 & 4, the North Carolina commission allowed Carolina Power and Light to recover sunk costs on the cancelled plants and to include the unamortized balance in rate base. In the case of Harris 3 & 4, however, the commission ordered that only the interest expense on long-term debt be included in rate base.

The commission reasoned that preferred and common shareholders control management of the company through its elected Board of Directors, and must absorb some of the risk associated with the cancellation, even though management decisions were prudent. On the other hand, the commission said ". . . that costs incurred by the Company to service its long-term debt must in fact be paid and that the long-term debtholder has very little direct impact on CP&L's

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*More indicative of the Wisconsin commission's policy on cancellation costs is its treatment of the Tyrone plant. In that case, the commission split the loss between ratepayers and shareholders by allowing Northern States Power Company to amortize the costs over a five-year period while excluding the unamortized balance from rate base.

management and the corporate decisions made by said management."

The Oklahoma commission granted a similar recovery scheme following cancellation of the Black Fox project. The commission allowed Public Service of Oklahoma to amortize sunk costs, including all accumulated AFUDC, and allowed a return on the debt and preferred portion of the unamortized balance. However, it excluded the equity portion of the unamortized balance from rate base. The commission also ruled that the amount of the unamortized balance should be reduced by future net revenues from several other ventures in which PSO is involved.

Some commissions, including those in Maryland, Michigan, Oklahoma and California, divided the sunk costs into nonsite-related and site-related costs. While nonsite-related costs were treated in various ways, site-related costs were reclassified as plant held for future use, and thereby included in rate base where they would earn a return. Through this recovery scheme, the commissions effectively authorized an earned return on at least a portion of the total sunk cost of the cancelled plants.

Cost Recovery Allowed With No Return On Unamortized Balance

A number of commissions have issued orders which found that all decisions with respect to a cancelled plant were prudent, but that the risk of loss due to cancellation of a project should be shared by ratepayers and investors. When this concept of "risk sharing" was adopted it was commonly translated into policy by allowing amortization of the loss, but disallowing a return on the unamortized balance. This treatment was adopted in some cases on the principle that, although the utility is entitled to recover all prudently incurred costs, abandoned plant costs are not "used and useful" in providing services and, therefore, should not be included in rate base.

FERC allowed New England Power Company (NEPCO) to recover costs associated with the Salem Harbor No. 5 plant, but excluded the unamortized balance from rate base. Although there was no dispute about whether NEPCO should be allowed to recover the sunk costs, the overriding issue was the extent to which shareholders should be protected from abandonment risks.

In attempting to strike an equitable balance between the interests of investors and ratepayers, FERC agreed with the administrative law judge that ". . . ratepayers are required to pay a return on only those investments in properties that are used and useful in the public service."

On appeal, the D.C. Circuit Court of Appeals affirmed this decision by FERC and rejected the argument that ". . . capital prudently invested in a generating facility is taken for public use and, further, that FERC may adopt any method of rate valuation so long as the end result is reasonable." The court also ruled that it was reasonable for FERC to balance policy objectives as it did in this case, by sharing the costs between ratepayers and investors.

The Virginia State Corporation Commission used similar reasoning in its decisions to allow Virginia Electric and Power Company to recover costs associated with the cancelled Surry Units 3 and 4 and North Anna Unit 4. No return was allowed on the unamortized balance because, as the commission stated in its Surry decision:

> "Surry 3 and 4 were never used and useful to the ratepayers . . . Under these circumstances, equity demands that VEPCO's investors must accept some of the risk of Surry 3 and 4 by forfeiture of any claim to an expected return on this investment." (Va. SCC Case No. 19960, issued 3/19/79)

Other commissions which have adopted this approach include Michigan, New Jersey and Texas.

Some commissions examined individual components of the sunk costs and disallowed recovery of certain portions. For example, the Oklahoma commission disallowed advertising and promotional expenses on the Black Fox project. Another cost that is often considered separately is the salvage value of any equipment and materials at the site. Frequently, commissions developed an estimate of salvage value and subtracted it from the recoverable amount. Some commissions also examined utilities' estimates of contract cancellation charges to determine their reasonableness, but usually allowed these costs to be recovered.

Section IV—Other Issues

Exclusion of AFUDC from Recoverable Amount

Commissions in California, Connecticut, Maine, and Massachusetts have approved amortization of abandoned plant costs with no return on the unamortized balance. These commissions also disallowed recovery of at least a portion of the AFUDC accumulated on the abandoned plant.

For example, the California PUC allowed San Diego Gas and Electric to recover costs associated with the abandoned Sundesert project but did not allow inclusion of the unamortized balance in rate base. In addition, the commission decided that although "AFUDC is as valid a project cost as any cash outlay for labor and equipment," it would be an equitable balance if more of the burden were placed on investors by disallowing recovery of the accumulated AFUDC.

In addition to the equity rationale, the commission invoked both the "used and useful" argument and the argument that AFUDC is designed in part to compensate for cancellation risk. It reasoned that:

> "Allowance for funds during construction covers the investors' risk when a project is undertaken and carried through to completion. When a proposed project is terminated, and siting and site-related costs are included in plant held for future use and/or amortized, it is proper to exclude the AFDC allowance for investor risk because the project did not come to fruition." (Cal PUC Decision No. 90405, issued June 5, 1979.)

The Maine commission used the same reasoning and adopted the same approach as the California commission in not allowing Central Maine Power Company to recover AFUDC accumulated on the cancelled Sears Island plant.

Commissions in Connecticut and Massachusetts have allowed utilities to amortize cancellation costs, including the debt and preferred equity portions of AFUDC, but have disallowed the common equity portion. In the case of the Boston Edison's Pilgrim 2 plant, the Massachusetts commission excluded the common equity portion of AFUDC from the unamortized balance included in the company's rate base.

On the other hand, FERC, in its decision on Tyrone, did not accept the suggestion of the ALJ to exclude the equity portion of accumulated AFUDC from the amount to be amortized. FERC rejected the AFUDC exclusion because of a concern that investors would then discount heavily the value of AFUDC earnings.

Selection of Amortization Period

In the cancellation cases examined, the amortization period has been as short as two years and as long as 20 years, with most commissions ordering a period of five or 10 years. A key criterion used by commissions to determine the length of the amortization period was the total dollar amount of the write-off and the impact on ratepayers of the phase-in of the write-off.

Commissions have given only limited consideration to the financial health of the company and specifically the effect of the amortization of the write-off on the company's cash flow. This is a critical factor because of the time value of money. Stated another way, the present value of the stream of incremental revenue (amortized sunk cost) is less than the amount of the write-off.

The result is that if the company is permitted to recover its sunk costs, but disallowed rate base treatment of the unamortized balance, the company is not "made whole." This problem is exacerbated as the length of the amortization period increases.

This point can be illustrated by considering a hypothetical case of a commission which allows a company to write-off its sunk cost investment of $10 million, amortized over 10 years. The amortization may be thought of as an annuity of $1 million payable to the utility in each of the next 10 years. But, if the inflation rate is 6% per year, the present value of the annuity is only $7.36 million. In this case, the company loses $2.64 million (in current dollars), or 26.4% of its sunk cost investment.*

The only way for the company to be "made whole" is for the commission to allow the company to earn a return on the unamortized balance. Earning a return on the unamortized balance means that the present value of the amortization would be equal to the current value of the loss plus a real return earned on the funds prudently invested in new plant.

In the absence of rate base treatment for the unamortized balance, the company could be "made whole" relative to the current value of the loss. For example, the commission could allow an annuity such that the present value of the amortization equals the current value of the loss. For the case of $10 million amortized over 10 years, and 6% inflation, the annuity would be approximately $1.36 million.

An interesting approach was taken by the New Jersey Board of Public Utilities in selecting an amortization period for Hope Creek 2. The commission authorized a 15 year amortization, but not on a straight-line schedule and with no rate base treatment of the unamortized balance. The amortization schedule was accelerated, with $21.5 million authorized in the first year, declining to $1.4 million in the fifteenth year. The accelerated amortization schedule was explicitly designed to enable the company to internally generate 50% of the capital needed to complete construction on the Hope Creek 1 unit.

Treatment of Taxes

Another regulatory issue which affects the companies ability to recover its sunk costs is the treatment of taxes associated with the write-off. It is a very complex issue, one which commissions could—and have—employed several policy options.

—Text—Continued on page 12

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*The effect of lengthening the amortization to 20 years is that the loss would be 42.6% of the sunk cost investment.

Table 3
Cancelled Plants:
Summary of Commission Decisions and Rationale

			Commission Decision			
			Cost Recovery Allowed			No Cost Recovery
Commission	Company	Plant	No Return	Earned Return	Amortization (Years)	
Arizona CC	Arizona PS	Palo Verde 4 & 5			—	x
California PUC	San Diego G & E	Sundesert	x		5	
Connecticut DPUC	Connecticut L&P et. al	Montague	x		3	
District of Columbia PSC	Potomac Electric Power	Douglas Point		x	10	
Federal Energy Regulatory Commission	New England Power	Salem Harbor 5	x[1]		5	
	New England Power	NEP 1&2	x		5	
	Northern States Power	Tyrone	x[2]		10	
	Southern Cal. Edison	Vidal			—	x[2]
Florida PSC	Gulf Power	Caryville		x[3]	5	
Idaho PUC	Idaho Power	Pioneer			—	x
Indiana PSC	Northern Indiana PS	Bailly	x		15	
Louisiana PSC	Gulf States	Blue Hills		x	10	
Maine PUC	Central Maine	Sears Island	x		5	
		Montague	x		5	
Maryland PSC	Potomac Electric Power	Dickerson	x		10	
		Douglas Point	x		10	
Massachusetts DPU	Boston Edison	Pilgrim 2		x	13	
	Commonwealth Electric	Pilgrim 2	x		2	
	Commonwealth Electric	Montague	x		3	
Michigan PSC	Detroit Edison	Fermi 3	x		10	
Minnesota PUC	Northern States Power	Sherco 4	x		3	
		Tyrone			—	x[4]
New Jersey BPU	Jersey Central P&L	Forked River	x		15	
	Public Service E&G	Atlantic	x		20	
	Public Service E&G	Hope Creek	x		15	
New York PSC	Rochester G&E et al	Sterling		x	3-10[5]	
North Carolina UC	Carolina P&L	South River		x	5	
	Carolina P&L	Shearon Harris 3 & 4		x[6]	10	
	Virginia Electric Power	North Anna 4		x	10	
North Dakota PSC	Northern States Power	Tyrone			—	x[7]
Ohio PUC	Cleveland Electric	Davis Bessie 2 & 3 Erie 1 & 2	x[8]		10	
	Ohio Edison	Davis Bessie 2 & 3 Erie 1 & 2	x[8]		10	
	Dayton P&L	Killen 1			—	x[9]
Oklahoma CC	PS Oklahoma	Black Fox		x[10]	10	
Oregon PUC	Pacific P&L	Pebble Springs WPPSS 5			—	x[11]
South Carolina PSC	Carolina P&L	South River	x		10	
South Dakota PUC	Northern States Power	Tyrone			—	x[12]
Texas PUC	Houston L&P	Allens Creek	x		5	
Vermont PSB	Central Vermont	Montague	x		5	
		Pilgrim 2	x		10	
Virginia SCC	Virginia Electric Power	Surry 3 & 4	x		10	
		North Anna 4	x		10	
	Potomac Electric Power	Douglas Point	x		10	
		Dickerson	x		10	
West Virginia PSC	Virginia Electric Power	North Anna 4	x		20	
Wisconsin PUC	Northern States Power	Tyrone	x		5	
	Wisconsin Electric et. al	Haven		x	3	
Wyoming PSC	Pacific P&L	Pebble Springs WPPSS 5			—	x

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[1] FERC decision disallowing unamortized balance in rate base was unsucessfully appealed by New Englanc Power to U.S. Court of Appeals and U.S. Supreme Court.

[2] FERC decision upheld by U.S. Court of Appeals.

[3] Florida PSC decision upheld by Florida Supreme Court.

[4] Appeal of Minnesota PUC decision is pending.

[5] Amortization schedule varied from 3 to 10 years for the 4 participating utilities. See Table 1, Note 12.

[6] Earned return only on interest expense on long-term debt.

Table 3

Commission	Favored Cost Recovery	Return On Unamortized Balance	Length Of Amortization Period	Against Cost Recovery
	Commission Rationale			
Arizona CC				2, 3, 4
California PUC	2	2		6
Connecticut DPUC	1			7
District of Columbia PSC			6	
Federal Energy Regulatory Commission	1, 4 5	1, 5 2	1, 2, 3, 5, 6	
Florida PSC				2
Idaho PUC				5
Indiana PSC	1, 3	3	1, 4, 5, 6	
Louisiana PSC	2			
Maine PUC	2 2	1 1	1 1	6 6
Maryland PSC	1			
Massachusetts DPU	1, 4 1	7 2	3, 5 1	7 3, 6, 7
Michigan PSC	1, 3	1		
Minnesota PUC	1			3
New Jersey BPU	1, 3 1, 4		4	7
New York PSC	1	4	3, 4, 5	
North Carolina UC	1 1 1	2, 3, 6 4	1, 2	6
North Dakota PSC				3
Ohio PUC	1 1, 3	2	1	5
Oklahoma CC	1, 4	4, 7		
Oregon PUC				1, 5
South Carolina PSC			1, 6	
South Dakota PUC				3
Texas PUC				
Vermont PSB	2 2	2 2	1 1	
Virginia SCC	1	1, 2 1, 2		
West Virginia PSC				
Wisconsin PUC	1	4		
Wyoming PSC				1, 5

*Legend to Commission Rationale

A. *In Favor of Cost Recovery*
- 1 decision to construct and cancel were prudent (when made)
- 2 no evidence that decisions were imprudent
- 3 company has statutory obligation to serve
- 4 commission decision to disallow cost recovery would disadvantage companies' access to capital markets or create severe financial difficulty
- 5 exclusion of AFUDC would cause investors to discount heavily the quality of AFUDC earnings

B. *On Issue of Return on Unamortized Balance*
- 1 no return permitted because plant never "used and useful"
- 2 no return is an equitable allocation of risk between ratepayers and shareholders
- 3 state law may prohibit authorization of return
- 4 return authorized so as not to penalize shareholders
- 5 no precedent for rate base treatment
- 6 carrying charges on funds prudently invested are "used and useful" property
- 7 portion of AFUDC excluded from rate base to balance risks between ratepayers and shareholders

C. *On Issue of Length of Amortization Period*
- 1 amortization period is a balance of interests between ratepayers and shareholders
- 2 matching of costs and benefits to present and future ratepayers
- 3 useful life of plant considered
- 4 financial health of company or impact on future construction considered
- 5 impact of amortization on rates considered
- 6 length of amortization is a judgement (reasonable) decision

D. *Against Full or Partial Cost Recovery*
- 1 plant will never be "used or useful"
- 2 insufficient evidence to establish prudence of decision
- 3 ratepayers should not pay costs resulting from actions taken by other utilities or commissions
- 4 risks should be borne by shareholders
- 5 state law or judicial interpretation prohibits cost recovery
- 6 portion of AFUDC excluded to balance risks between ratepayers and shareholders
- 7 some portion of costs incurred after a certain date (i.e., decision to suspend construction) are disallowed

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[7] North Dakota PSC decision disallowing cost recovery appealed by Northern States Power. North Dakota Supreme Court reversed PSC decision based on the doctrine of Federal preemption.

Ohio PUC decision allowing cost recovery reversed by Ohio Supreme Court decision in suit by Ohio Consumer Counsel.

[9] Ohio PUC decision disallowing cost recovery predicated on prior Ohio Supreme Court ruling in Cleveland Electric case.

[10] Return allowed on debt and preferred equity component.

[11] Oregon PUC decision disallowing cost recovery based on Oregon law (Ballot Measure 9) which prohibits CWIP in rate base.

[12] South Dakota PUC decision disallowing cost recovery reversed by South Dakota Supreme Court, pending appeal by the commission.

In a number of cases, commissions explicitly reduced the amount of sunk costs to be recovered by the amount of tax credits associated with the loss and taken by the company; other commissions have authorized amortization of the before tax loss. Commissions which amortize the net of tax loss "gross up" the amount to be amortized for tax liability, to prevent underrecovery.

Another option is for commissions to flow through the tax benefits to the ratepayer, but then the company is not "made whole." Yet another option is to normalize the tax benefits. In this case, cost recovery more fully approaches the present value level of the write off, because the company receives the time value of money associated with the tax benefit.

Section V—Summary of Findings

This report analyzes the regulatory treatment of cancelled generating plants by state commissions, the courts and the Federal Energy Regulatory Commission. The study identified and examined approximately 40 cancellation cases in nearly 30 jurisdictions. The report results indicate that there are some common approaches, but also significant differences, between jurisdictions in the regulatory treatment of sunk costs.

Table 3 is a compilation of decisions, organized by state commissions, showing some of the same data as Table 1, but in a slightly different format. The table shows commission decisions with regard to cost recovery, and gives the commissions' rationale for their decisions.*

The data in Table 3 support these findings:

1. The vast majority of commission included in the survey support the principle of cost recovery for cancelled plants—
   - 21 commissions have decided in favor of cost recovery, and
   - only eight commissions have decided against cost recovery; and of those eight, four approved cost recovery in other cancellation cases.
2. The most important criterion considered by commissions in deciding in favor of cost recovery was whether management decisions to construct and then cancel new plants were prudent when made—
   - the principle of "used and useful" was overshadowed by the principle of prudence of management decisions, and
   - where commissions used the principle of "used and useful", some commissions ruled that cancelled plants *would never be* "used and useful," while some commissions ruled that capital prudently invested in new plant constituted "used and useful" property even if the plant never reached fruition.
3. Commissions which prohibited cost recovery did so for different reasons, the most important being:
   - court or commission interpretation of state law prohibiting cost recovery,
   - ratepayers in one jurisdiction should not be financially responsible for the actions of companies or commissions in other jurisdictions, and
   - insufficient evidence to establish the prudence of management decisions.
4. Of the commissions which authorized cost recovery, approximately one-third also authorized rate base treatment (returns) on the unamortized balance—
   - the rationale for commission decisions was based on equity consideration, i.e., allocation of risk between shareholders and ratepayers.
5. Length of the amortization period represents a balancing of interests between shareholders and ratepayers—
   - decisions were based most often on the amount lost and the impact of the amortization on rates, and
   - little consideration was given to the impact of the amortization of the company's cash flow.
6. The treatment of tax losses and AFUDC affect the companies' financial stability—
   - commission decisions affect cash flow and likely affect investor perceptions.

There is a great need for further analysis of these issues, particularly with respect to the effects of plant cancellations on the financial health of the electric utility industry. EEI's Rate Regulation Department is continuing to study this area, and intends to publish the results of these studies in future Special Reports.

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*Only the arguments made by commissions in the orders are included in Table 3; other arguments in ALJ decisions, testimony, briefs, etc., are not included.

Section VI—Case Summaries

Company: Arizona Public Service Company
Agency: Arizona Corporation Commission
Case No.: U-1345—Decision No. 51009
Date of Decision: 5/29/80

Plant Name: Palo Verde Units 4 and 5
Plant Type: Nuclear

Sunk Costs Involved:
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

URAP Accession No. 004131

Comments:

The Arizona CC disallowed amortization of the cancelled Palo Verde project, primarily because the plant was cancelled as a result of regulatory considerations of the California utilities participating in the project. The commission decided that Arizona customers should not be required to pay for a plant that was cancelled as a result of California regulatory policies. The commission also found that the risk of completing a new plant should properly be borne by the investors of the utility. In addition, the prudence of the planning and cancellation of the project had not been shown to the commission's satisfaction.

Company: Boston Edison Company
Agency: Massachusetts Department of Public Utilities
Case No.: 906
Date of Decision: 4/30/82 and 5/13/82

Plant Name: Pilgrim 2
Plant Type: Nuclear

Sunk Costs Involved: $278.3 million
Cost Recovery Allowed: Yes, costs incurred before 6/30/80
Rate of Amortization: 13 years
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: Yes, at 14% (AFUDC excluded)

URAP Accession No. 009752

Comments:

In this decision the Massachusetts Department of Public Utilities allowed Boston Edison to recover part of the cost which had been spent on the cancelled Pilgrim 2 project. In reaching its decision, the DPU found that investments in the plant during the period from 1971 through 1979 were prudent, but that expenses incurred after July 1, 1980 were not prudent and not recoverable through rates. The DPU also disallowed $41.4 million from the total amount to be amortized in order to eliminate the common equity portion of AFUDC associated with the project. The costs on which a return was allowed were net of tax benefits allocable to the expenses for which cost recovery was allowed. The DPU further ordered the company to take steps to implement programs of conservation and load management.

Company: Carolina Power & Light Company
Agency: North Carolina Utilities Commission
Case No.: E-2, Sub 366
Date of Decision: 4/22/80

Plant Name: South River
Plant Type: Nuclear

Sunk Costs Involved: $7.0 million
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: Yes

URAP Accession No. 010172

Comments:

The North Carolina UC found that CP&L's decision to abandon the South River project was reasonable and prudent. The commission allowed amortization of the abandonment cost over a five year period with the unamortized balance included in rate base.

Company: Carolina Power & Light Company
Agency: North Carolina Utilities Commission
Case No.: E-2, Sub 444
Date of Decision: 9/24/82

Plant Name: Shearon Harris 3 and 4
Plant Type: Nuclear

Sunk Costs Involved: $92.0 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: Only interest expense on $2.7 million long term debt

URAP Accession No. 010976

Comments:

The North Carolina UC allowed the company to recover its sunk costs over a 10 year amortization period, and include in rate base the interest expense on long-term debt. The order notes that such ratemaking treatment equitably shares the burden between CP&L's preferred and common shareholders and ratepayers. The commission reasoned that shareholders control management of the company through its elected Board of Directors, and must absorb some of the risk associated with the cancellation, even though management decisions were prudent. On the other hand, long-term debtholders have ". . . very little direct impact on CP&L's management and the corporate decisions made by said management." The commission further reasoned that long-term debt service, even on plants which are abandoned, should be considered property used and useful in providing service.

Company: Carolina Power & Light Company
Agency: South Carolina Public Service Commission
Case No.: Docket No. 81-163-E—Order No. 82-284
Date of Decision: 6/1/82

Plant Name: South River
Plant Type: Nuclear

Sunk Costs Involved: $2.0 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

URAP Accession No. 010161

Comments:

The South Carolina PSC authorized the company to recover its loss over a 10 year amortization period, with no inclusion of the unamortized balance in rate base. The commission rejected the proposal of the Consumer Advocate to amortize over 16.78 years, as well as the staff proposal (three to five years), noting, that a ". . . three year period of amortization would allow the company to recover its costs over a shorter period of time thereby recognizing the benefits of the present value concept of money."

Company: Central Maine Power Company
Agency: Maine Public Utilities Commission
Case No.: 80-25
Date of Decision: 10/31/80

Plant Name: Sears Island
Plant Type: Nuclear

Sunk Costs Involved: $3,497,000 (precertification); $971,820 (uranium contract)
Cost Recovery Allowed: Yes (AFUDC excluded)
Rate of Amortization: 5 years
Treatment of Tax Effect:
Unamortized Balance in Rate Base: No

URAP Accession No. 005089

Comments:

This decision involved the disposition of precertification and uranium enrichment costs associated with a nuclear plant, which was cancelled after discovery of a geological fault near the site. After concluding that CMP was not imprudent in incurring costs associated with the Sears Island Nuclear Plant, the Maine PUC allowed the investment to be amortized over a five year period. The unamortized balance was excluded from rate base and accumulated AFUDC ($343,274 associated with precertification and $500,000 associated with the uranium contract) was excluded from the costs to be amortized because the commission felt that this would balance the risks of the project between ratepayers and shareholders.

Company: Central Maine Power Company
Agency: Maine Public Utilities Commission
Case No.: 81-127/81-206
Date of Decision: 3/27/82

Plant Name: Montague, Pilgrim 2
Plant Type: Nuclear

Sunk Costs Involved: $1.6 million (Montague), $14.5 million (Pilgrim 2)
Cost Recovery Allowed: Yes for Montague (AFUDC excluded)
Rate of Amortization: 5 years
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: No

URAP Accession No. 009492

Comments:

The commission allowed recovery of the costs of the Montague project, which it found to be prudent, but it disallowed $691,000 of accumulated AFUDC associated with the project. A decision on treatment of costs associated with Pilgrim 2 has been postponed for consideration in Case No. 82-168. Pending a decision on whether investments in Pilgrim were prudent and final resolution of the total costs involved, the commission disallowed amortization of the Pilgrim costs and inclusion of the investment in rate base.

Company: Central Vermont Public Service Corporation
Agency: Vermont Public Service Board
Case No.: 4496/4504
Date of Decision: 12/4/81

Plant Name: Montague
Plant Type: Nuclear

Sunk Costs Involved: $0.8 million (1.73% ownership)
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

URAP Accession No. 009169

Comments:

In this decision, the Vermont PSB permitted cost recovery, including AFUDC, amortized over a five year period. The PSB, however, disallowed inclusion of the unamortized balance in the rate base because to do so would not, in the PSB's opinion, be an equitable apportionment of risk between ratepayers and investors.

Company: Central Vermont Public Service Corporation
Agency: Vermont Public Service Board
Case No.: 4634
Date of Decision: 9/16/82

Plant Name: Pilgrim 2
Plant Type: Nuclear

Sunk Costs Involved: $8.2 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

URAP Accession No. 010959

Comments:

The Vermont PSB allowed the company to recover its sunk cost of $8.2 million over a 10 year amortization period, but without including the unamortized balance in rate base. The company had originally requested that it recover its sunk cost over three years or alternatively, over 10 years if the unamortized balance were included in rate base. The PSB reasoned that allowing the company to normalize the tax loss of $3.4 million and amortizing the total loss of $8.2 million over 10 years without rate base treatment was an equitable sharing of risk between shareholders and ratepayers.

special report

Company: Cleveland Electric Illuminating Company
Agency: Ohio Public Utilities Commission
Case No.: 79-537-EL-AIR
Date of Decision: 7/10/80

Sunk Costs Involved: $56.4 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Plant Name: Davis Besse Units 2 and 3,
Erie Units 1 and 2
Plant Type: Nuclear

URAP Accession No. 004436

Comments:

In this case the Ohio PUC allowed amortization of cancellation costs over a 10 year period. The commission concluded that the Central Area Power Coordination Group (CAPCO), of which CEI is a member, had been prudent in its decisions regarding the construction, and in January 1980, the decision to cancel the plants and, therefore, allowed the amortization. In its filing, the company did not request that the unamortized balance be included in the rate base. (This decision was reversed by the Ohio Supreme Court, 67 Ohio St.2d).

Company: Cleveland Electric Illuminating Company
Agency: Ohio Supreme Court
Case No.: 80-1480, 80-1528 and 80-1547 (67 Ohio St.2d)
Date of Decision: 7/15/81

Sunk Costs Involved:
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Plant Name: Davis Besse Units 2 and 3,
Erie Units 1 and 2
Plant Type: Nuclear

URAP Accession No. 007500

Comments:

This decision of the Ohio Supreme Court reverses the Ohio PUC decision in Case No. 79-537-EL-AIR which allowed CEI to recover its investment in cancelled nuclear plants. The Court made reference to the "used and useful" doctrine in reaching its decision. The Court recognized that its decision ran counter to the Ohio, and other, commission decisions, and that it would disadvantage the utility's access to capital markets. The Court nevertheless ruled on a strict interpretation of Ohio statutes.

Company: Cleveland Electric Illuminating Company
Agency: Ohio Public Utilities Commission
Case No.: 81-146-EL-AIR
Date of Decision: 3/17/82

Sunk Costs Involved:
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Plant Name: Davis Besse Units 2 and 3,
Erie Units 1 and 2
Plant Type: Nuclear

URAP Accession No. 009770

Comments:

In this follow-up decision, the commission stated that it saw merit in approving amortization of costs incurred on the four cancelled nuclear units, but that it must disallow these costs because of a decision of the Supreme Court of Ohio in Ohio Consumer Counsel vs. Public Utilities Commission, 67 Ohio St.2d 153 (1981).

special report

Company: Commonwealth Electric Company,
Cambridge Electric Company
Agency: Massachusetts Department of Public Utilities
Case No.: D.P.U. 956/D.P.U. 1003-G-6
Date of Decision: 5/28/82 and 9/22/82

Sunk Costs Involved: $10.0 million (total)
Cost Recovery Allowed: Yes, for Pilgrim and Montague equity component of AFUDC excluded
Rate of Amortization: See comments
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: No

Plant Name: Pilgrim 2, Montague Units 1 and 2, NEP 1 and 2
Plant Type: Nuclear

URAP Accession No. 010136

Comments:

In the first decision, the Massachusetts DPU ruled on the recovery of costs incurred in the construction of all three plants. The DPU disallowed base rate cost recovery on the New England plants, asserting that if costs are recovered, the mechanism should be a fuel adjustment or purchased power adjustment review. In the same decision, the DPU permitted cost recovery of the expenses connected with the Pilgrim and Montague plants. The DPU found that the company had acted prudently on the Montague plant, and that expenses on Pilgrim 2 incurred through June 1980 were also prudent. The company was permitted a two year amortization of Pilgrim 2 expenses, and a three year amortization of Montague expenses.

In the second decision, the DPU allowed Commonwealth to recover costs associated with the New England Power Company plants through fuel adjustment mechanism, over a period of three years. For all three plants, the equity component of AFUDC was excluded from the recoverable amount, and no return on the unamortized balance was permitted. The DPU authorized the same cost recovery procedure for Cambridge Electric Company's sunk cost of $661,000 in the New England Power Company plants.

Company: Connecticut Light & Power Company,
Hartford Electric Light Company
Agency: Connecticut Department of Public Utility Control
Case No.: 810602/810604
Date of Decision: 11/25/81

Sunk Costs Involved: $5.3 million (total)
Cost Recovery Allowed: Yes, partial
Rate of Amortization: 3 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Plant Name: Montague
Plant Type: Nuclear

URAP Accession No. 009202

Comments:

The DPUC found that the utilities' investments made prior to 1978 were prudent, but investments made between 1978 and 1980 were "ill advised," based on earlier decisions. The DPUC thus disallowed cost recovery on that portion of the investment.

Company: Dayton Power and Light Company
Agency: Ohio Public Utilities Commission
Case No.: 81-21-EL-AIR
Date of Decision: 2/3/82

Sunk Costs Involved: $4.5 million
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Plant Name: Killen Unit 1 (2nd unit at Killen Station)
Plant Type: Coal

URAP Accession No. 009210

Comments:

The company had requested recovery of sunk costs of about $4.5 million to be amortized over 18 months. The staff of the Ohio Commission cited the Ohio Supreme Court decision in recommending no write-off, and the PUC issued an order to that effect.

special report

Company: Detroit Edison Company
Agency: Michigan Public Service Commission
Case No.: U-5108
Date of Decision: 5/27/77

Plant Name: Fermi 3
Plant Type: Nuclear

Sunk Costs Involved: $6.8 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

URAP Accession No. 003736

Comments:

The commission allowed Detroit Edison to recover its investment in the cancelled Fermi 3 nuclear plant over a 10 year period. In doing so, the commission found that the company had been prudent in its actions regarding the plant. However, since the plant was never "used and useful" in providing service, the unamortized balance of the investment was excluded from rate base.

Company: Gulf Power Company
Agency: Florida Public Service Commission
Case No.: 800001-EU (CR)–Order No. 9628
Date of Decision: 11/10/80

Plant Name: Caryville
Plant Type: Fossil

Sunk Costs Involved: $12.0 million
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: Yes

URAP Accession No. 009932

Comments:

The Florida PSC allowed Gulf Power to amortize costs associated with the cancelled Caryville plant over a five year period and include the unamortized balance in rate base. Since Gulf Power cancelled the plant because it intended to buy a portion of a less expensive plant being constructed by Georgia Power, the commission required the company to collect revenues associated with the write-off, subject to refund, in the event that the purchase of alternative capacity is not completed within one year.

The commission also allowed inclusion of $1.3 million in rate base, representing plant held for future use in connection with the land held for the Caryville site. In reaching this decision, the commission found that there is evidence that the company will eventually build a plant on the site and that it would be less costly for ratepayers if the company retained the land.

The Florida Supreme Court upheld the commission's decision, finding that the PSC "neither violated the essential requirements of law nor abused its discretion" in rendering this decision.

Company: Gulf States Utilities Company
Agency: Louisiana Public Service Commission
Case No.: U-14495
Date of Decision: 11/17/80

Plant Name: Blue Hills
Plant Type: Nuclear

Sunk Costs Involved: $12.5 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: Yes

URAP Accession No. 005480

Comments:

The commission allowed Gulf State Utilities to amortize its investment in the abandoned Blue Hills nuclear project "because no evidence exists to show imprudence or negligence on the part of the company in initiating the project." The company was allowed to include the unamortized balance in rate base. The annual amortization was reduced to account for the treatment of tax losses, and an extraordinary gain realized by the company on the sale of nuclear fuel.

special report

Company: Houston Lighting & Power Company
Agency: Texas Public Utility Commission
Case No.: 2001
Date of Decision: 11/27/78

Sunk Costs Involved: $1,392,120
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Plant Name: Allen's Creek Unit 2
Plant Type: Nuclear

URAP Accession No. 000016

Comments:

This order allowed the company to recover costs associated with the abandoned Allen's Creek Unit 2 nuclear plant by amortizing these costs over a five year period.

Company: Idaho Power Company
Agency: Idaho Public Utilities Commission
Case No.: U-1006-185—Order No. 17499
Date of Decision: 8/20/82

Sunk Costs Involved: $2.5 million
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Plant Name: Pioneer 1 and 2
Plant Type: Coal

URAP Accession No. 010893

Comments:

The company tried to recover $2.5 million associated with a boiler, ordered for the Pioneer plant, but sold when the Idaho commission cancelled the plant. The $2.5 million represented the net loss to the company when the boiler was sold. The Idaho commission accepted its staff's position, and disallowed the $2.5 million loss in rates.

Company: Jersey Central Power & Light Company
Agency: New Jersey Board of Public Utilities
Case No.: 804-285
Date of Decision: 7/31/81

Sunk Costs Involved: $394.5 million
Cost Recovery Allowed: Yes, but portion of AFUDC excluded
Rate of Amortization: 15 years
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: No

Plant Name: Forked River
Plant Type: Nuclear

URAP Accession No. 007809

Comments:

In this case, the BPU allowed Jersey Central Power & Light to recover costs associated with the abandoned Forked River plant by amortizing these costs over 15 years. The amortized amount was reduced by the deferred income tax savings associated with the loss, and the unamortized balance was excluded from rate base. In addition, the BPU eliminated all AFUDC which accrued to the project subsequent to the decision to suspend construction activities.

Company: New England Power Company
Agency: Federal Energy Regulatory Commission
Case No.: ER-76-304—Opinion No. 49
Date of Decision: 7/19/79

Plant Name: Salem Harbor 5
Plant Type: Oil

Sunk Costs Involved: $12.9 million
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects: Cost recovery permitted on gross investment
Unamortized Balance in Rate Base: No

URAP Accession No. 005473

Comments:

In this opinion, FERC found the plant investment was prudent and permitted cost recovery. The commission allowed recovery on the gross amount and an amortization period of five years, thus overruling the ALJ who suggested recovery on only the net of tax amount and an amortization of 10 years. FERC, however, followed the ALJ's advice in disallowing the unamortized amount to be included in rate base. FERC's decision was upheld by the U.S. Court of Appeals.

Company: New England Power Company
Agency: Federal Energy Regulatory Commission
Case No.: W-2 (ER80-67)
Date of Decision: 11/26/80 (Settlement Approval)

Plant Name: NEP 1 and 2
Plant Type: Nuclear

Sunk Costs Involved: $30.6 million
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

This case was filed with the FERC on November 1, 1979. New England Power received summary judgement on 12/31/79 which disallowed the rate base treatment of NEP 1 and 2. The intervenors and NEP reached a settlement agreement in the W-2 case which included the amortization period.

Company: New England Power Company
Agency: U.S. Court of Appeals (DC Circuit)
Case No.: 80-1343, 80-1363, 80-1364, 80-1745, and 80-1283
Date of Decision: 10/15/81

Plant Name: Salem Harbor 5
Plant Type: Oil

Sunk Costs Involved: $12.9 million
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

URAP Accession No. 008636

Comments:

In this case, FERC had originally ruled that the company could recover its expenses on the cancelled plant, but disallowed inclusion of the unamortized balance in rate base. The company appealed this decision by FERC to exclude the unamortized balance of the cancelled project from rate base even though FERC had found the investment to be prudent and recoverable over a five year amortization period. The court, in upholding FERC's opinion, that FERC may adopt any method of rate base valuation as long as the end result is reasonable. The court also stated that it recognized the general rule that an item may be included in rate base only when it is "used and useful." In reply to the argument that FERC had adopted an inconsistent approach to this issue, the court held that the commission had established a reasonable balance between the interests of ratepayers and investors by allowing cost recovery, while also excluding the unamortized balance from rate base.

In June 1982, the U.S. Supreme Court denied NEPCO a review of this case, and let stand the Court of Appeals decision.

special report

Company: Northern Indiana Public Service Company
Agency: Indiana Public Service Commission
Case No.: 36689
Date of Decision: 8/11/82

Plant Name: Bailly
Plant Type: Nuclear

Sunk Costs Involved: $190.7 million
Cost Recovery Allowed: Yes
Rate of Amortization: 15 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

URAP Accession No. 010684

Comments:

The Indiana PSC allowed full amortization, based on its findings that NIPSCO had prudently undertaken the Bailly project to meet its statutory obligation to serve. Choice of amortization period was based on a PSC balancing of investor and ratepayer interests. NIPSCO had sought a five year period; the PSC opted for 15 years, resolving the question of who should bear the loss on the time value of money in ratepayer favor because ratepayers were being asked to pay for plant which would never be "used and useful." NIPSCO did not seek inclusion of the unamortized balance in rate base; the PSC asserted in dictum that Indiana law precluded such inclusion, as Bailly had not been "actually used and useful." Related deferred taxes of $69 million were also allowed to be amortized over a 15 year period.

Company: Northern States Power Company
Agency: Federal Energy Regulatory Commission
Case No.: ER-79-616—Opinion No. 134
Date of Decision: 12/3/81

Plant Name: Tyrone
Plant Type: Nuclear

Sunk Costs Involved: $67 million, including estimates of contract cancellation costs.
Cost Recovery Allowed: Yes
Rate of Amortization: Variable term at $7.5 million per year.
Treatment of Tax Effects: Not required
Unamortized Balance in Rate Base: No, not requested due to FERC precedent

URAP Accession No. 008936

Comments:

The decision in this case involved the rates for transactions between subsidiaries of Northern States Power Company. FERC allowed the company to recover its costs at a rate of $7.5 million per year until the actual costs have been amortized. The original filing with FERC assumed a total cost of $75 million which has since been adjusted to $67.1 million. The FERC decision requires ongoing reporting of the status of settlement with vendors as well as a review of all charges once contract negotiations have been completed. The company had originally requested a five year amortization with the commission ultimately requiring the variable term procedure previously described. The FERC did not allow, nor did the company request, rate base treatment for the unamortized balance. Intervenors proposed, but FERC did not allow, that tax effects be considered as negative rate base. The FERC decision spoke clearly to this issue and determined that tax effects should not be considered unless the unamortized balance was afforded rate base treatment. The commission also rejected the suggestion of the administrative law judge that Northern States not be allowed to recover the equity portion of accumulated AFUDC associated with the project. The commission reasoned that disallowance of these costs would cause investors to discount heavily the value of AFUDC earnings of their utilities.

Prior to the FERC decision, the North Dakota PSC disallowed Northern States Power from amortizing its jurisdictional expenses. The company appealed the decision to the North Dakota Supreme Court, which ruled in favor of the company, finding that the doctrine of federal preemption precluded the action of the state commission. The Minnesota and South Dakota commissions lost their appeal to the U.S. Court of Appeals for the 8th Circuit, which affirmed FERC's decision in October 1982. The Wisconsin commission approved recovery of their portion of the abandonment costs.

special report

Company: Northern States Power Company
Agency: Minnesota Public Utilities Commission
Case No.: E-002 GR-80-316
Date of Decision: 4/30/81

Plant Name: Tyrone, Sherco 4
Plant Type: Nuclear

Sunk Costs Involved:
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

URAP Accession No. 006966

Comments:

The Minnesota PUC rejected Northern States Power Company's request to recover costs associated with the cancelled Tyrone nuclear plant. In doing so, it stated that the Wisconsin PSC had acted in a "parochial" fashion in denying a certificate for the plant, that the cancellation was not a ratepayer benefit, and that the risks of this loss should be borne by the stockholders.

A further issue in this case was whether Minnesota had the power to deny recovery of these costs for which FERC approved amortization in the wholesale rates charged by Northern States (Wisconsin) to its parent company, Northern States Power Company.

In the same docket, the PUC affirmed the amortization of the loss associated with the Sherco 4 plant, noting that "Sherco 4 was prudently commenced and prudently abandoned." The three year amortization began in March, 1978.

Company: Ohio Edison Company

Agency: Ohio Public Utilities Commission
Case No.: 80-141-EL-AIR
Date of Decision: 2/11/81

Plant Name: Davis Besse Units 2 and 3, Erie Units 1 and 2
Plant Type: Nuclear

Sunk Costs Involved: $85.5 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects: Reduce recoverable amount to $47 million
Unamortized Balance in Rate Base: No

URAP Accession No. 008543

Comments:

In this case, the commission allowed Ohio Edison to amortize costs associated with four cancelled nuclear plants over a 10 year period. In reaching this decision, the commission found that CAPCO had been reasonable in planning to build the plants and that it had also been reasonable in cancelling the plants at the time that these decisions were made. However, the commission denied Ohio Edison's request to include the unamortized balance in the rate base, noting that the units would never be "used and useful." The commission also found that this treatment would be an appropriate sharing of the loss between ratepayers and investors.

Company: Pacific Power & Light Company
Agency: Oregon Public Utility Commission
Case No.: UF-3779—Order No. 82-606
Date of Decision: 8/18/82

Plant Name: Pebble Springs, WPPSS 5
Plant Type: Nuclear

Sunk Costs Involved: $109.6 million; $67.3 million (net of taxes)
Cost Recovery Allowed: Yes, but loss offset by extraordinary gain
Rate of Amortization:
Treatment of Tax Effects: Reduces recoverable amount
Unamortized Balance in Rate Base:

URAP Accession No. 010710

Comments:

The Oregon commissioner ruled that the after tax loss would be offset by extraordinary gains received through PP&L's debt/equity swap and tax benefit sale. The gains would be applied to the loss associated with Pebble Springs because the company committed to that plant first (in 1974); any remaining amount could be applied to the investment in WPPSS 5.

PP&L had sought to recover from ratepayers its entire investment in Pebble Springs (except that recovered through tax benefits) over five years, with a return on the unamortized balance. The commissioner interpreted an Oregon statute, which forbids inclusion of CWIP in rate base, to bar amortization. He read the statute broadly "to exclude all costs of ventures which never reach fruition."

In a previous order, dated 4/8/82, the Oregon commissioner implied that the company would be allowed to recover costs.

Company: Pacific Power & Light
Agency: Wyoming Public Service Commission
Case No.: D-9454, Sub 17
Date of Decision: 10/8/82

Plant Name: Pebble Springs, WPPSS 5
Plant Type: Nuclear

Sunk Costs Involved: $32.0 million
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Comments:

The Wyoming PSC denied Pacific Power & Light's request to recover costs associated with the cancelled Pebble Springs and WPPSS 5 nuclear plants. The PSC based its ruling on its interpretation of Wyoming statutes.

The PSC ruling was made in open session, for that reason, its written order has not yet been prepared. The written order is expected to address the Wyoming portions of the gain arising for PP&L's debt/equity exchange.

Company: Potomac Electric Power Company
Agency: District of Columbia Public Service Commission
Case No.: 685–Order No. 6096
Date of Decision: 6/14/79

Plant Name: Douglas Point
Plant Type: Nuclear

Sunk Costs Involved: $66 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: Yes (credit)

URAP Accession No. 000919

Comments:

In this case, the PSC decided to treat all costs and benefits of the cancelled projects as a single expense. PEPCO was allowed to recover the jurisdictional portion of $62.4 million in costs associated with design, construction, and termination of its Douglas Point plant as well as costs incurred for uranium enrichment. In addition, it was allowed to recover the jurisdictional portion of $3.6 million in certification costs and $4.7 million representing redemption premiums on preferred stock associated with the project. Since the company also had gains of $86.3 million associated with its related uranium contracts, the PSC required that these be added to the losses resulting in a net gain on the project. The net gain was reduced slightly by the net tax effects, and the balance was ordered to be amortized over a 10 year period. The commission stated that this would be a reasonable period and would allow sufficient time to ascertain the actual amounts of some items which were estimated in determining the credit.

Company: Potomac Electric Power Company
Agency: Maryland Public Service Commission
Case No.: 7597–Order No. 65749
Date of Decision: 4/28/82

Plant Name: Dickerson
Plant Type: Coal

Sunk Costs Involved: $85.0 million (total)
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

URAP Accession No. 010235

Comments:

The Maryland PSC noted that the hearing examiner found the company's investments prudent when incurred and that the decision to abandon the project was reasonable. The PSC further noted that these findings were supported by substantial evidence, and affirmed the findings.

special report

Company: Public Service Company of Oklahoma
Agency: Oklahoma Corporation Commission
Case No.: 27068—Order No. 206560
Date of Decision: 1/15/82

Plant Name: Black Fox
Plant Type: Nuclear

Sunk Costs Involved: $260 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: Return allowed on debt and preferred equity portion

URAP Accession No. 009934

Comments:

In this order, the commission concluded that the costs and risks involved in the Black Fox nuclear project were so great that the project was no longer economically viable. The commission announced that any further expenditures on the project would be considered to be imprudent, but that the management decisions concerning the project prior to the order in this case were prudent. Public Service Company of Oklahoma was ordered to notify the commission within 30 days as to whether it intended to cancel the Black Fox project. In the event that the project was cancelled, the commission announced that it would allow amortization of the net balance over a 10 year period. Since the cancellation would amount to an extraordinary loss, the commission ordered that the net recoverable balance be reduced by the amount of all extraordinary gains realized by the company since 1974, as well as future gains. The commission decided to allow a return on debt and preferred equity portion of the unamortized net balance in order to allow the company to access capital markets while allocating the risk of the project between investors and ratepayers.

The commission also ordered future net revenues from other company ventures to be credited to the amortized balance. Finally, the commission ordered costs of the project to be allocated to the various classes on a kilowatt hour energy charge basis.

Company: Public Service Electric and Gas Company
Agency: New Jersey Board of Public Utilities
Case No.: 794-310
Date of Decision: 4/11/80

Plant Name: Atlantic
Plant Type: Nuclear

Sunk Costs Involved: $301.3 million
Cost Recovery Allowed: Yes
Rate of Amortization: 20 years
Treatment of Tax Effects: Reduce recoverable amount to $174.5 million
Unamortized Balance in Rate Base: No

URAP Accession No. 003572

Comments:

The New Jersey BPU found in this case that Public Service Electric and Gas has been prudent in its decisions related to planning and eventually abandoning the Atlantic nuclear project. As a result, it allowed Public Service Electric and Gas to recover the associated costs.

Company: Public Service Electric and Gas Company
Agency: New Jersey Board of Public Utilities
Case No.: 8012-914
Date of Decision: 4/1/82

Plant Name: Hope Creek 2
Plant Type: Nuclear

Sunk Costs Involved: $370 million
Cost Recovery Allowed: Yes
Rate of Amortization: 15 years (accelerated)
Treatment of Tax Effects: Reduce recoverable amount to $172.2 million
Unamortized Balance in Rate Base: No

URAP Accession No. 009741

Comments:

In a special inquiry on utility construction plans, the BPU decided to allow PSE&G to amortize $172.2 million in after-tax losses associated with abandonment of the Hope Creek 2 nuclear plant. In doing so, the BPU found that the decision to construct the plant was prudent when made and that the decision to abandon construction was also prudent when made. On the grounds that the primary purpose for building the plant was to achieve fuel savings, the BPU ordered that the amortized losses be recovered through company's Levelized Energy Adjustment Clause over a 15 year period. The BPU also prescribed an accelerated schedule for cost recovery which declines from $21.5 million in the first year to $1.4 million in the fifteenth year. Since it was concerned that the company might have some difficulty in completing the Hope Creek I plant, the BPU explained that the amortization schedule was designed to enable PSE&G to generate 50% of its capital requirements internally during 1982 and 1983.

special report

Company: Rochester Gas and Electric Company, *et al*
Agency: New York Public Service Commission
Case No.: 27794 (Phase I)—Opinion No. 81-1
Date of Decision: 1/6/81

Plant Name: Sterling
Plant Type: Nuclear

Sunk Costs Involved: See Phase II decision
Cost Recovery Allowed: Decision deferred until Phase II
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

URAP Accession No. 009042

Comments:

In Phase I of this proceeding, the New York PSC concluded that costs associated with the Sterling nuclear project were prudent until January 1978. A decision on the prudence of costs incurred after that date was reserved for consideration in Phase II of the proceeding, although the commission stated in this opinion that there was already strong evidence that costs incurred between January and March 1978 were also prudent. The commission explained in its opinion that it determined prudence by whether management's decisions had a rational basis and not by whether the commission would have made different decisions.

Company: Rochester Gas and Electric Company, *et al*
Agency: New York Public Service Commission
Case No.: 27794 (Phase II)—Opinion No. 82-1
Date of Decision: 1/13/82

Plant Name: Sterling
Plant Type: Nuclear

Sunk Costs Involved: Total costs for all participants of $121.1 million including AFUDC
Cost Recovery Allowed: Yes
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base: Yes

URAP Accession No. 009366

Comments:

In this opinion, the commission determined that the participants in the cancelled Sterling nuclear plant should be allowed to recover the costs of their investments in the project, and also earn a return on the unamortized balances during the amortization period. The commission allowed the following amortization rates for the participating utilities: Niagara Mohawk—three years; Central Hudson and Rochester Gas and Electric—five years; and Orange and Rockland—10 years. In Phase I of this proceeding, the commission had found that costs associated with the project prior to January 1978 were prudent. In this phase, the commission found that costs incurred subsequent to that date were also prudent. The decision in this case rejected the arguments by intervenors that stockholders should bear the cost of the extraordinary losses involved. The commission reasoned that management was motivated in part to build the plant because of the utilities' obligation to serve.

Company: San Diego Gas & Electric Company
Agency: California Public Utilities Commission
Case No.: 58067/55627/55629—Decision No. 904045
Date of Decision: 6/5/79

Plant Name: Sundesert
Plant Type: Nuclear

Sunk Costs Involved: $90.3 million: $42.8 nonsite, $47.5 site
Cost Recovery Allowed: Yes (AFUDC excluded)
Rate of Amortization: 5 years on nonsite related costs
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: No (nonsite related costs)

URAP Accession No. 005164

Comments:

In this case, the commission allowed San Diego Gas & Electric to amortize $39.2 million out of a total of $42.8 million in nonsite related costs associated with the abandoned Sundesert nuclear project. The commission ordered a five year amortization period and required that the unamortized balance of the investment be excluded from rate base. In addition, the commission disallowed any recovery of $3.1 million of AFUDC accumulated in connection with this investment. The commission based its decision on precedents established in earlier abandonment cases and its finding that management actions were prudent at the time they were taken.

Site-related costs of $45.34 million associated with this Sundesert project were included in the rate base as plant held for future use. Accumulated AFUDC of $2 million associated with this investment was eliminated from the original amount requested until construction of a useful generation facility is completed at the site. Legal advocacy costs of $0.16 million were disallowed.

In other cases, San Diego Gas & Electric cancelled other, smaller generating plants and received similar regulatory treatment from the California commission.

Company: Southern California Edison Company
Agency: Federal Energy Regulatory Commission
Case No.: ER76-205—Opinion No. 62
Date of Decision: 8/22/79

Plant Name: Vidal
Plant Type: Nuclear

Sunk Costs Involved: $865,000 (FERC jurisdiction)
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

URAP Accession No. 005465

Comments:

In this opinion, FERC found that the investment in the Vidal plant was not prudent and disallowed cost recovery. In reaching this opinion, FERC found that the company did not produce specific evidence justifying the write off, that the evidence "merely consisted of vague generalizations about the problems inherent in all building projects."

The FERC decision was upheld by the U.S. Court of Appeals.

Company: Southern California Edison Company
Agency: U.S. Court of Appeals (DC Circuit)
Case No.: 80-1334 and 80-1527
Date of Decision: 12/11/81

Plant Name: Vidal
Plant Type: Nuclear

Sunk Costs Involved: $865,000
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

URAP Accession No. 009314

Comments:

The U.S. Court of Appeals (DC Circuit) upheld the FERC decision to exclude from rates amortization of costs associated with the abandoned Vidal project. The court ruled that the company had not met the burden of proving that its investment was prudent, and therefore FERC was correct in not allowing the write-off.

Company: Virginia Electric and Power Company
Agency: Virginia State Corporation Commission
Case No.: 19960
Date of Decision: 3/19/79

Plant Name: Surry Units 3 and 4
Plant Type: Nuclear

Sunk Costs Involved: $66.1 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: No

URAP Accession No. 001257

Comments:

The Virginia SCC allowed VEPCO to recover its investment costs associated with two cancelled units over a 10 year period. The commission decided to exclude the unamortized balance from rate base because it found that it would be inappropriate to allow a return on investments which will not become "used and useful" in providing service.

Company: Virginia Electric and Power Company
Agency: North Carolina Utilities Commission
Case No.: E-22, Sub 257
Date of Decision: 7/15/81

Plant Name: North Anna Unit 4
Plant Type: Nuclear

Sunk Costs Involved:
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: Yes

URAP Accession No. 008087

Comments:

The North Carolina UC found that the decision to build North Anna 4 was prudent when made and the decision to cancel the unit was likewise prudent when made because of declining load growth and changing capital requirements. As a result, the UC decided that VEPCO should be permitted to recover costs over a 10 year period. The unamortized balance was included in rate base so stockholders would not be penalized as a result of prudent management decisions

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Company: Virginia Electric and Power Company
Agency: Virginia State Corporation Commission
Case No.: 810025
Date of Decision: 8/24/81

Plant Name: North Anna Unit 4
Plant Type: Nuclear

Sunk Costs Involved: $130 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

URAP Accession No. 008179

Comments:

Virginia SCC allowed VEPCO to recover costs associated with its North Anna Unit 4 plant which was cancelled because of a decline in load growth and a large incease in construction cost estimates. The commission allowed investment associated with the plant to be amortized over a 10 year period since it concluded that the decision to abandon the plant was proper. In an attempt to apportion risks between ratepayers and shareholders, the commission decided to exclude the unamortized balance from the rate base

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Company: Virginia Electric and Power Company
Agency: West Virginia Public Service Commission
Case No.: 81-413-E-42T
Date of Decision: 6/10/82

Plant Name: North Anna Unit 4
Plant Type: Nuclear

Sunk Costs Involved:
Cost Recovery Allowed: Yes
Rate of Amortization: 20 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

URAP Accession No. 010930

Comments:

The PSC allowed cost recovery over 20 years per settlement agreement between VEPCO and PSC staff. VEPCO had sought 10 year amortization and rate base inclusion of the unamortized balance

special report

Company: Wisconsin Electric Power Company, *et. al*
Agency: Wisconsin Public Service Commission
Case No.: 05-CE-3
Date of Decision: 2/14/80

Plant Name: Haven
Plant Type: Nuclear

Sunk Costs Involved: $36.9 million
Cost Recovery Allowed: Yes
Rate of Amortization: 3 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: Yes

URAP Accession No. 009969

Comments:

As a result of hearings on the accounting treatment to be given the Haven plant while its approval was delayed by the NRC, the Wisconsin PSC issued this order giving the participating utilities a strong incentive to cancel the project. The commission stated that if the plant were cancelled it would allow recovery of the sunk costs over a three year period. If the project were not cancelled, all additional precertification costs would be treated as operating expenses rather than being capitalized. In addition, the commission announced that if the plant were cancelled within 30 days of the order, the unamortized balance could be included in rate base; if the plant were not cancelled within 30 days, however, the unamortized balance would be excluded from rate base. The plant was cancelled within 30 days.

SURVEY

A
SPECIAL REPORT
from the
EEI
Rate Regulation Department
SR 84-01
March 1984

Regulatory Treatment of Cancelled Plants

Survey Update of Cases in 1983

ACKNOWLEDGEMENTS

EEI gratefully acknowledges the efforts of the contractor, Utility Strategies, Inc., Washington, D.C., in collecting and analyzing the statistical information in this report. Mr. Michael Rosenzweig, president, was the lead consultant on this effort. Thanks also go to members of EEI's Rate Research Committee who reviewed the case summaries and made helpful suggestions on the scope and format of this report.

Within EEI, Mr. Eliot Wessler was the Project Manager. Thanks also go to Mr. Peter Corcoran and Mr. Bill Coleman who reviewed the draft materials and who added new information based on their tracking of rate cases and legislative developments for the *Rate and Regulation Review (R3)* newsletter. Mr. Tim Letzkus provided assistance in identifying documents from the URAP data base system and in production of this report. Finally, thanks go to Ms. Margaret Gunther and Ms. Mary Carter for typing and editing the report.

David K. Owens, Director
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I. INTRODUCTION

In December 1982, EEI published Special Report No. 3, RegulatoryTreatment of Cancelled Plants. The report provided a retrospective of generating plant cancellations and the regulatory treatment of the sunk cost investment in those plants. The report was intended to be as comprehensive as possible, and included a survey of regulatory and judicial decisions through the Fall of 1982.

The study included nearly 50 cancellation cases in 29 different jurisdictions. These cases are shown in Table 1, which is reprinted from Special Report No. 3. Also shown is the reprint of Table 2, cases pending before commissions in December 1982.

Analysis of these cases indicated that there were three distinct methods used by commissions to allocate recovery of sunk costs. The most common method used was to allow the company partial cost recovery, thereby allocating the risks between investors and ratepayers. In most cases this meant that the company was allowed to amortize its entire sunk cost investment, but not allowed to earn a return on the unamortized balance by including it in rate base. Several commissions allowed full cost recovery by allowing rate base inclusion of the unamortized balance. On the other end of the spectrum, a roughly equal number of commissions denied recovery of all or a significant portion of the sunk costs.

In addition to the basic issue of allocation of cost responsibility, commission decisions reflected varying policies on three other, important issues: accumulated AFUDC, selection of the amortization period and treatment of taxes.

- Accumulated AFUDC—most commissions which allowed amortization of sunk costs included AFUDC in the recoverable amount. However, a small number of commissions excluded some or all of accumulated AFUDC from the recoverable amount as a means of allocating risk between investors and ratepayers.
- Selection of the amortization period—in the cancellation cases examined, the amortization period was as short as two years and as long as 20 years, with most commissions ordering a period of five or 10 years. A key criterion used by commissions to determine the length of the amortization period was the total dollar amount of the write-off and the impact on ratepayers of amortization of the write-off.
- Treatment of Taxes—was a complex issue for commissions, some of which authorized recovery of the before-tax loss, while others authorized recovery of the after-tax loss. Another decision for commissions involved whether to flow-through or normalize the benefits from the tax write-off.

Table 1
Commission Decisions on Recovery of Sunk Costs Through 1982

	Cancelled Plant					Commission Decision			
						Cost Recovery Allowed			No Cost Recovery
Company	Name of Plant	Fuel Type	Capacity (MW)	Sunk Cost (Millions)	Commission	No Return	Earned Return	Amortization (years)	
Arizona Public Service	Palo Verde 4 & 5	N	1309 each	—	Az.			—	X
Boston Edison	Pilgrim 2	N	1216	$278.3[4]	Mass.		X	13	
Carolina Power & Light	South River	N	1150	$7.0	N.C.		X	5	
				$2.0	S.C.	X		10	
Carolina Power & Light	Shearon Harris 3 & 4	N	900 each	$92.0	N.C.		X[1]	10	
Central Maine	Sears Island	N	1186	$4.7[4]	Maine	X		5	
Central Maine	Montague	N	1245	$1.6[4]	Maine	X		5	
Central Vermont	Montague	N	1245	$0.8	Vt.	X		5	
Central Vermont	Pilgrim 2	N	1216	$8.2	Vt.	X		10	
Cleveland Electric[2]	Davis Besse 2 & 3 Erie 1 & 2	N N	914 each 1280 each	$56.4 (total)	Ohio[2]			—	X[2]
Commonwealth Electric	Pilgrim 2 Montague	N N	1216 1245	$10.0 (total)	Mass.	X X		2 3	
Connecticut L&P et. al	Montague	N	1245	$5.3 (total)	Conn.	X		3	
Dayton P&L	Killen 1	F	613	$4.5	Ohio			—	X[3]
Detroit Edison	Fermi 3	N	—	$6.8	Mich.	X		10	
Gulf Power	Caryville	F	500	$12.0	Fla.		X[2]	5	
Gulf States	Blue Hills	N	949	$12.5	La.		X	10	
Houston L&P	Allens Creek 2	N	1150	$1.4	Texas	X		5	
Idaho Power	Pioneer 1 & 2	F	511 each	$2.5[5]	Idaho			—	X
Jersey Central P&L	Forked River	N	1100	$394.5[4]	N.J.	X		15	
New England Power	Salem Harbor 5	F	880	$12.9	FERC	X[6]		5	
New England Power	NEP 1 & 2	N	—	$30.6	FERC	X		5	
Northern Indiana PS	Bailly	N	—	$190.7	Ind.	X		15	
Northern States Power	Sherco 4	F	809	—	Minn.	X		3	
Northern States Power[7]	Tyrone	N	1192	$67.0	FERC	X		10	
				—	Wisc.	X		5	
				$10.9	Minn.			—	X
				—	N.D.			—	X
				—	S.D.			—	X
Pacific P&L	Pebble Springs	N	1309	$109.6 (total)	Ore.			—	X[8]
	WPPSS 5	N	1316	$32.0	Wyo.			—	X
Potomac Electric Power	Douglas Point	N	1206	$96.0	D.C.		X[9]	10	
				—	Md.	X		10	
				—	Va.	X		10	
Potomac Electric Power	Dickerson	F	828	$85.0	Md.	X		10	
				—	Va.	X		10	
PS of Oklahoma	Black Fox	N	1180	$260.0	Okla.		X[10]	10	
Public Service E&G	Atlantic	N	1211	$301.3	N.J.	X		20	
Public Service E&G	Hope Creek	N	1118	$370.0	N.J.	X		15[11]	
Rochester G&E[12]	Sterling	N	—	$121.1 (total)	N.Y.		X	3-10[12]	
San Diego G&E	Sundesert	N	985	$90.3[4]	Cal.	X		5	
Southern California Edison	Vidal	N	—	$0.9	FERC			—	X[13]
Virginia Electric	Surry 3 & 4	N	934 each	$65.1	Va.	X		10	
Virginia Electric	North Anna 4	N	955	$130.0	Va.	X		10	
				—	N.C.		X	10	
				—	W. Va.	X		20	
Wisconsin Electric et. al.	Haven	N	952	$36.9	Wisc.		X	3	

Table 2
Cancelled Plants: Cases Pending Before Commissions Through 1982

Company	Name of Plant	Fuel Type	Capacity (MW)	Sunk Cost (Millions)	Commission
Carolina P&L	Shearon Harris 3 & 4	N	900 each	$40.0	S.C.
Consolidated Edison	Cornwall	Pumped Storage	2000	$49.8	N.Y.
Detroit Edison	Greenwood 2 & 3	N	1297 each	$70.0	Mich.
Duke Power	Perkins 1, 2 & 3	N	1341 each	$5.2 $5.0	N.C. S.C.
Houston L&P	Allen's Creek 1	N	1130	$362.0	Texas
New York State E&G[1]	New Haven 1 & 2	N	1233 each	$79.0 (total)	N.Y.[2]
Portland General Electric	Pebble Springs	N	1309	$132.0	Ore.
Potomac Electric Power	Dickerson	F	828		D.C.
Southern California Edison	[3]	—	—	$49.7[3]	Cal.[4]
Union Electric	Callaway 2	N	1192	— —	Ill. FERC

Notes
Table 1

ote: Sunk cost is the jurisdictional amount. (*) indicates that a portion of AFUDC disallowed from recovered amount.

[1] Earned return only on interest expense on long-term debt.

[2] Ohio PUC originally allowed cost recovery, but decision reversed by Ohio Supreme Court. Decision also applies to Ohio Edison petition for cost recovery.

[3] Ohio PUC decision predicated on previous Ohio Supreme Court ruling in Cleveland Electric case.

[4] Florida PSC decision upheld by Florida Supreme Court.

[5] Net loss after sale of Pioneer boiler.

[6] FERC decision disallowing unamortized balance in rate base was unsuccessfully appealed by New England Power to U.S. Court of Appeals and U.S. Supreme Court.

[7] The FERC allocation of charges, which was challenged by the South Dakota and Minnesota commissions, was upheld by the 8th U.S. Circuit Court of Appeals in October, 1982. Northern States Power (Minnesota) appealed commission decisions disallowing cost recovery in all three states: Minnesota appeal is pending; North Dakota commission decision reversed; and South Dakota commission decision reversed, pending further appeal by South Dakota commission.

[8] Oregon commissioner interpreted state statute as prohibiting amortization of loss on cancelled plants. Extraordinary loss on plants offset by extraordinary gains.

[9] Net gain, resulting from sale of uranium contracts, included in rate base.

[10] Return allowed on debt and preferred equity portion.

[11] Accelerated amortization schedule allowed by New Jersey Board of Public Utilities.

[12] Also, Niagara Mohawk, Central Hudson and Orange & Rockland. Amortization schedule: RG&E—5 years; NM—3 years; CH—5 years; O&R—10 years.

[13] FERC decision upheld by U.S. Court of Appeals.

Notes
Table 2

[1] Also, Long Island Lighting.

[2] Recommended decision by ALJ to permit both companies to recover costs and earn a return on the unamortized balance has not been acted on yet by N.Y. Commission.

[3] Southern California Edison has had losses of $49.7 million (1972-1981) associated with abandoned generating and other plant, of which, only 20% has been recovered by the company as a result of petitions to the California Commission; SCE is not petitioning for recovery of residual losses.

[4] California Commission is considering request by SCE to establish procedure for recovery of prudent sunk costs of cancelled projects in the future.

II. RESULTS OF THE SURVEY UPDATE

The purpose of this Special Report, 84-01, is to provide a survey update of cancellation decisions which have occurred between the Fall of 1982 and December 31, 1983. During this 15 month period, an additional 24 cases have been identified in 19 different jurisdictions. Table 3 provides summary detail on these cases, including commission decisions on cost recovery. Note that many of the cases which were pending before commissions at the end of 1982 (shown on Table 2) have been decided and are shown on Table 3. In addition, 12 cases were pending before commissions as of January 1984, and these cases are shown on Table 4. It is interesting to note that several cases shown on Table 2 that were pending as of the end of 1982 still are pending, as shown on Table 4.

The methodology used to identify cancellation cases is the same methodology used in the original Special Report No. 3. Plant cancellations were identified using EEI in-house sources and survey of trade publications and Department of Energy sources. The cases identified in the surveys are only those for which plant cancellation has been announced by the constructing utilty(s), and for which the company has specifically requested cost recovery from its commission(s). Further, a cancellation case was not included unless a significant financial commitment had been made. This required that the NSSS had been ordered for nuclear units, a boiler ordered for fossil-fired units and a turbine ordered for hydro units.

The principal finding of the survey update is that there have been no significant changes in regulatory treatment of cancelled plants in 1983 when compared to prior years. Of the 24 cases shown on Table 3, 17 resulted in cost recovery and only 7 resulted in no cost recovery. The commissions that allowed cost recovery required amortization over periods from 2 to 15 years, with 10 years being the most commonly-used amortization period. One important difference that occurred in the 1983 cases is that no commission allowed full cost recovery, i.e., rate base inclusion and therefore earned return on the unamortized balance.

Of the 6 commissions which denied cost recovery, 4 did so essentially because they were prohibited by state law from allowing cost recovery. The 4 states are Maine, Montana, Oregon and Missouri. A brief discussion of these state laws, as well as a more complete summary of the 24 cases, appear in the Appendix to this report.

Table 3
Cancelled Plants:
Commission Decisions on Recovery of Sunk Costs
In 1983

Company	Cancelled Plant			Jurisdictional Sunk Cost (Millions)	Commission	Cost Recovery Allowed			No Cost Recovery Allowed
	Name of Plant	Fuel Type	Capacity (MW)			Partial (No Return)	Full (Earned Return)	Amortization (years)	
Atlantic City Electric	Hope Creek 2	N	1067	$13	NJ	X		15	
Carolina Power & Light	Shearon Harris 3 & 4	N	900 each	$144	SC	X		10	
Central Illinois Light	Duck Creek 2	F	400	$30	IL	X		5	
Central Maine Power	Pilgrim 2	N	1216	$15	ME			—	
Detroit Edison	Greenwood 2 & 3	N	1297 each	$71	MI	X		10	X[1]
Duke Power	Cherokee 1, 2 & 3	N	1280	$225[2]	NC	X		10	
Duke Power	Perkins 1, 2 & 3	N	1280 each	$5	NC	X		5	
Duke Power	Perkins 1, 2 & 3 Cherokee[2] 2 & 3	N N	1280 each 1280 each	$27[2] (total)	SC	X		10	
Duquesne Light	Davis Besse 2 & 3 Erie 1 & 2	N N	906 each 1260 each	$35 (total)	PA	X		10	
Houston Lighting & Power	Allens Creek 1	N	1130	$362[3]	TX	X		10	
Iowa Power & Light	Vandalia	N	1270	$3	IA			—	X[4]
Ohio Edison	Davis Besse 2 & 3 Erie 1 & 2	N	906 each 1260 each	$52 (total)	OH	X[5]		10	
Pacific Power & Light	Pebble Springs 1 & 2 WPPSS 5	N N	1260 each 1240	$5 (total)	CA			—	X
Pacific Power & Light	Pebble Springs 1 & 2	N	1260 each	$4	MT			—	X
Pacific Power & Light	WPPSS 5 Pebble Springs 1 & 2	N N	1240 1260 each	$20 (total)	WA	X[6]		5	
Pennsylvania Power	Davis Besse 2 & 3 Erie 1 &2	N N	906 each 1260 each	$0.3 (total)	FERC	X		10	
Portland General Electric	Pebble Springs 1 & 2	N	1260 each	$132	OR			—	X[7]
Potomac Electric Power	Dickerson 4	F	850	$20	DC	X		10	
Puget Sound Power & Light	Pebble Springs 1 & 2	N	1260 each	$61	WA	X		10	
Union Electric	Callaway 2	N	1150	$3	IA			—	X
Union Electric	Callaway 2	N	1150	$5	IL	X		5	
Union Electric	Callaway 2	N	1150	$63	MO			—	X
United Illuminating	Pilgrim 2	N	1216	$15	CT	X		2	
Virginia Electric Power	Surry 3 & 4 North Anna 3 & 4	N N	884 each 907 each	$30 (total)	NC	X[8]		10	

Table 4
Cancelled Plants:
Cases Pending Before Commissions
As of January 1984

Company	Name of Plant	Fuel Type	Capacity (MW)	Jurisdictional Sunk Cost (Millions)	Commission
Consolidated Edison[1]	Cornwall	Pumped Storage	2000	$50	NY
Duke Power	Cherokee 1	N	1280	$100	SC
Duke Power	Cherokee 1, 2 &3	N	1280 each	—	FERC
Long Island Lighting[2]	New Haven 1 & 2	N	1233 each	$53	NY
New York State E & G[2]	New Haven 1 & 2	N	1233 each	$51	NY
Pennsylvania Power	Davis Besse 2 & 3 Erie 1 & 2	N N	906 each 1260 each	$16 (total)	PA
Public Service New Hampshire	Pilgrim 2	N	1216	—	NH
Puget Sound Power & Light	Skagit 1 & 2	N	1288 each	$128	WA
Union Electric	Callaway 2	N	1150	$4	FERC
Virginia Electric Power	North Anna 3	N	907	$344	VA
Virginia Electric Power	North Anna 3	N	907	$47[3]	FERC

Notes
Table 3

[1] The Maine PUC deferred a decision based on Maine statute which prohibits cost recovery until what would have been the completion date of the plants.

[2] Cost recovery on Cherokee 1 is still pending before the South Carolina PSC (see Table 4). Jurisdictional sunk costs shown for Cherokee units is net of taxes.

[3] The Texas PUC disallowed $166 million in project costs on the grounds that they were imprudently incurred.

[4] Cost recovery disallowed without prejudice for the second time.

[5] The Ohio PUC originally allowed partial cost recovery but was reversed by the Ohio Supreme Court on appeal. Project cost recovery has been disallowed in the subsequent general rate cases for Ohio Edison, Toledo Edison and Cleveland Electric Illuminating (the project's third joint-owner).

[6] In February 1983, the Washington UTC disallowed all cost recovery but allowed an increment to the rate of return (250 basis points) to compensate for investor's perception of increased risk. In February 1984, the WUTC reversed its earlier decision and allowed the company to amortize approximately $25 million of its investment over a five year period, with no return on the unamortized balance.

[7] Although no recovery of project costs was allowed, the Oregon Commissioner concomitantly allowed the utility to retain for shareholders the capital gains resulting from the repurchase of its low interest debt securities which were selling at discount prices.

[8] The North Carolina UC reversed a previous decision allowing full recovery of the senior debt cost associated with the cancellation of North Anna 4.

Notes
Table 4

[1] Case is still pending before New York PSC.

[2] See Table 2.

[3] Settlement amount.

APPENDIX
CASE SUMMARIES

Company: Atlantic City Electric Company
Agency: New Jersey Board of Public Utilities
Case No: Docket No. 822-116
Date of Decision: 12/6/82

Plant Name: Hope Creek 2
Plant Type: Nuclear

Sunk Costs Involved: $13 million
Cost Recovery Allowed: Yes
Rate of Amortization: 15 Years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

Atlantic City Electric Company requested amortization of its 5 percent share of the project's cost over a 4 year period with inclusion of the unamortized balance in rate base. The New Jersey BPU allowed straight-line amortization over 15 years with no return on the unamortized balance.

Company: Carolina Power & Light Company
Agency: South Carolina Public Service Commission
Case No: 82-328-E (Order No. 83-583)
Date of Decision: 10/28/83

Plant Name: Shearon Harris 3&4
Plant Type: Nuclear

Sunk Costs Involved: $143.7 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

The South Carolina PSC allowed 10 year amortization of investment with no return on unamortized balance as "a cost sharing" of the loss between shareholders and ratepayers.

Company: Central Maine Power Company
Agency: Maine Public Utilities Commission
Case No: Docket 82-266
Date of Decision: 12/15/83

Plant Name: Pilgrim 2
Plant Type: Nuclear

Sunk Costs Involved: $15 million
Cost Recovery Allowed: No (deferred)
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Comments:

The Maine PUC denied cost recovery at this time, noting that it is precluded from deciding on the issue by new state legislation passed in May 1983 (35 M.R.S.A. §52-A). The law forbids the PUC to issue any order concerning cost recovery on any cancelled or abandoned electric generating facility until after the last date announced for completion of the facility by the lead participant in it. An exception is made if a utility can establish, as part of a general rate case, "that it will be unable to perform its public service or attract necessary capital on just and reasonable terms" unless the PUC "authoriz(es) the current recovery of all or a portion of the cost from ratepayers." Facilities for which the PUC has authorized any cost recovery prior to the law's effective date are exempted.

The PUC found, on the basis of the case record that the last date announced for completion of Pilgrim 2 by the lead participant (Boston Edison) is no later than April 1987; it therefore deferred consideration of cost recovery. The PUC also found that no exemption is warranted at this time based on the financial condition of the company.

Company: Central Illinois Light Company
Agency: Illinois Commerce Commission
Case No: 83-0177
Date of Decision: 12/21/83

Plant Name: Duck Creek 2
Plant Type: Fossil

Sunk Costs Involved: $53.7 million; $29.7 million (net of taxes)
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: No

Comments:

The Illinois CC found the Company's decisions relating to the project to be prudent and allowed the company to recover the related investment. The Company had proposed a 10 year amortization period with the unamortized balance in rate base. The ICC felt the most equitable sharing of the burden between ratepayers and shareholders was achieved with a five year amortization and no return earned on any remaining balance. The Company will sell or scrap the turbine built for the plant and the proceeds will be off-set against the investment.

cancelled plant

Company: Detroit Edison Company
Agency: Michigan Public Service Commission
Case No: U-6474 and U-6949
Date of Decision: 3/31/83 (both cases)

Plant Name: Greenwood 2 & 3
Plant Type: Nuclear

Sunk Costs Involved: $71 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

The Commission found that Detroit Edison Company's decisions to initiate Greenwood 2 and 3 and to suspend construction, restore construction and, finally, to cancel the projects, were all prudent at the times they were made. Consequently the company was allowed to recover its investment in the units over a 10-year period; however, no return was allowed on the unamortized balance because the units were not "used and useful."

Company: Duke Power Company
Agency: North Carolina Utilities Commission
Case No: E-7, Sub 338
Date of Decision: 11/1/82

Plant Name: Perkins 1, 2 & 3
Plant Type: Nuclear

Sunk Costs Involved: $5.1 million
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

The North Carolina UC did not allow rate base treatment of the unamortized balance because it felt it would be unfair to ratepayers and also because "evidence tends to indicate that extended periods of time elapsed with no appreciable construction activity" on the project.

special report

Company: Duke Power Company
Agency: North Carolina Utilities Commission
Case No: E-7, Sub 358
Date of Decision: 9/30/83

Plant Name: Cherokee 1,2 & 3
Plant Type: Nuclear

Sunk Costs Involved: $224.5 million (net of taxes)
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects: Reduced recoverable amount
Unamortized Balance in Rate Base: No

Comments:

The North Carolina UC allowed recovery of investment in Cherokee units 1, 2 & 3 over a 10 year period with no return on the unamortized balance. The UC found the investment and cancellation prudent and that partial recovery represented a fair and equitable sharing of burden between ratepayers and shareholders. The UC also reaffirmed its treatment for the Perkins plant from 1982.

Company: Duke Power Company
Agency: South Carolina Public Service Commission
Case No: 82-50-E (Order No. 83-92)
Date of Decision: 3/15/83

Plant Name: Perkins 1, 2 & 3
Cherokee 2 & 3
Plant Type: Nuclear

Sunk Costs Involved: $27 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

The South Carolina PSC allowed a 10 year amortization of the cancellation costs of both projects, with no rate base treatment of the unamortized balance, as a "reasonable balancing of costs between the company and the ratepayer."

Company: Duquesne Light Company
Agency: Pennsylvania Public Utility Commission
Case No: R-21945
Date of Decision: 1/27/83

Plant Name: Davis Besse 2 & 3
Erie 1 & 2

Sunk Costs Involved: $34.7 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

The Pennsylvania PUC allowed recovery of the projects' sunk cost of $34.7 million over a 10 year amortization period. The dollar amount was not contested by any party. The PUC adopted the findings of a Commission investigation (I-79070315) of the cancellations.

Company: Houston Lighting and Power Company
Agency: Public Utility Commission of Texas
Case No: Docket No. 4540
Date of Decision: 12/6/82

Plant Name: Allens Creek 1
Plant Type: Nuclear

Sunk Costs Involved: $362 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects: Tax savings from cancellation were entirely passed on to ratepayers.
Unamortized Balance in Rate Base: No

Comments:

The Commission disallowed $166 million in project-related costs on the grounds that they were imprudently incurred after the plant should have been cancelled (which the Commission deemed should have occurred on 1/01/80). Furthermore, in an unprecedented decision, the Commission required the company to pass onto its ratepayers all of the benefits of the tax writeoff of these disallowed costs. Finally, the deferred taxes resulting from the writeoff of the recoverable project costs were subtracted from the rate base even though no return was allowed on the unamortized balance.

Company: Iowa Power & Light Company
Agency: Iowa State Commerce Commission
Case No: RPU-82-12 (RPU-80-36)
Date of Decision: 2/10/83

Plant Name: Vandalia
Plant Type: Nuclear

Sunk Costs Involved: $3 million
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Comments:

The Iowa SCC refused for the second time to allow recovery of any cancellation costs because the company had failed to convince the SCC that ratepayers should share the costs. The Company had argued that such a sharing of costs was equitable based on the prudency of its actions. The SCC decision was made without prejudice to another attempt by the Company to present a convincing argument.

Company: Ohio Edison Company
Agency: Public Utility Commission of Ohio
Case No: 81-898-EL-AEM
Date of Decision: 7/31/81

Plant Name: Davis Besse 2 & 3
Erie 1 & 2
Plant Type: Nuclear

Sunk Costs Involved: $52 million
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Comments:

This case was a request by the company for emergency rate relief of $90 million, on an annualized basis, over then current rates. The need for such relief arose from the Ohio Supreme court decision (of 7/15/81) which prohibited the recovery of any investments in cancelled projects. That decision forced Ohio Edison to writeoff in one year against common shareholder's equity, its share of Davis Bessie 2 & 3 and Erie 1 & 2. Without the requested increase in revenues the rapid writeoff would have effectively foreclosed the company's access to new long-term financing.

Company: Pacific Power & Light
Agency: Montana Public Service Commission
Case No: 82.7.53 (Order No. 4975)
Date of Decision: 4/18/83

Plant Name: Pebble Springs 1 & 2
WPPSS 5
Plant Type: Nuclear

Sunk Costs Involved: $3.8 million (net of taxes)
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Comments:

The Montana PSC disallowed any recovery of any costs associated with either project. The PSC read Montana law to "limit a utility's recovery of investments . . . (at least from ratepayers) to those . . . which are actually used and useful . . . ." The PSC went further and stated it would be appropriate to apply the used and useful standard even if not required by law.

Company: Pacific Power & Light
Agency: Washington Utilities and Transportation Commission
Case No: U-82-12, U-82-35 and U-83-33
Date of Decision: 2/1/83, 2/9/84

Plant Name: Pebble Springs 1 & 2
WPPSS5
Plant Type: Nuclear

Sunk Costs Involved: $20.1 million (net of taxes)
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

The Washington UTC did not allow direct amortization of the company's investment in the cancelled project. But "[t]he Commission has determined to recognize the shared risk of shareholder and Washington ratepayer" by increasing the allowed rate of return by 250 basis points. In part, the WUTC rejected amortization because such recovery was barred in two other states (Oregon and Wyoming). The WUTC reversed this decision in Case U-83-33, eliminating the equity return premium but allowing amortization of approximately $25 million over a five year period, with no earned return on the unamortized balance.

special report

Company: Pacific Power and Light Company
Agency: California Public Utility Commission
Case No: 82-07-048
Date of Decision: 12/2/83

Plant Name: Pebble Springs 1 & 2
WPPSS 5
Plant Type: Nuclear

Sunk Costs Involved: $4.7 million (net of taxes)
Cost Recovery Allowed: No
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Comments:

The California PUC denied any recovery of costs associated with these plants. The PUC noted, however, that: 1) shareholders' risk associated with denial of cost recovery will be considered in determining a reasonable rate of return in the pending proceeding; 2) ratemaking treatment to reflect gain from debt-equity exchange will be addressed in PP&L's next rate case; 3) Staff recommendation of finding of imprudence was not borne out by the record; and 4) denial of cost recovery on the grounds of the "used and useful" argument was inappropriate.

Company: Pennsylvania Power Company
Agency: Federal Energy Regulatory Commission
Case No: ER-81-779-004 (Phase I)
Date of Decision: 1/11/84

Plant Name: Davis Besse 2 & 3
Erie 1 & 2
Plant Type: Nuclear

Sunk Costs Involved: $0.3 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: No

Comments:

The FERC adopted the ALJ's initial decision which, absent a showing of imprudence, followed precedent of allowing 10 year amortization of after-tax investment with no rate base treatment for the unamortized balance.

cancelled plant

Company: Portland General Electric
Agency: Oregon Commissioner
Case No: UF 3796
Date of Decision: 9/23/82

Plant Name: Pebble Springs 1 & 2
Plant Type: Nuclear

Sunk Costs Involved: $132 million
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects: Tax benefits from writeoff are retained by Company, partially off-setting the loss
Unamortized Balance in Rate Base:

Comments:

The Oregon Public Utility Commissioner required Portland General Electric to absorb the entire cost of the cancelled Pebble Springs plant. However, in the same decision he agreed to allow the company to retain for its shareholders the capital gains resulting from the repurchase of its older, low interest debt securities, which were selling at discount prices, and from the tax benefits gained through the "Safe Harbor" leasing provisions of the Federal Economic Recovery Tax Act. In addition, in a previous rate case the company was granted a higher allowed return on equity in recognition of the higher risk associated with participation in Pebble Springs.

Company: Potomac Electric Power Company
Agency: District of Columbia Public Service Commission
Case No: 7716
Date of Decision: 12/29/82

Plant Name: Dickerson 4
Plant Type: Fossil

Sunk Costs Involved: $19.6 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects: Reduce recoverable amount
Unamortized Balance in Rate Base: No

Comments:

The District of Columbia PSC ruled that the Company's decisions relating to Dickerson were prudent and allowed recovery of the investment over a 10 year period. Based on its own precedents and the reasoning of the D.C. Circuit Court of Appeals in New England Power Co. v. FERC *case, the D.C. PSC did not allow rate base treatment of the unamortized balance.*

Company: Puget Sound Power & Light Company
Agency: Washington Utilities and Transportation Commission
Case No: U-82-38
Date of Decision: 7/25/83

Plant Name: Pebble Springs 1 & 2
Plant Type: Nuclear

Sunk Costs Involved: $61 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects: Used to reduce recoverable amount
Unamortized Balance in Rate Base: No

Comments:

The Washington UTC relied on its reasoning in the earlier companion case for Pacific Power & Light's share of Pebble Springs. The UTC held that "a shared responsibility of the loss" was necessary to enable Puget Power to render adequate service at reasonable rates. The "most equitable allocation" according to the UTC was a 10 year amortization period with no return on the unamortized balance. The WUTC suggested this approach resulted in a 70/30 split between ratepayers and shareholders and places some costs on future ratepayers who would have benefitted from the project.

Company: Union Electric Company
Agency: Illinois Commerce Commission
Case No: 82-0525
Date of Decision: 5/23/83

Plant Name: Callaway 2
Plant Type: Nuclear

Sunk Costs Involved: $5 million
Cost Recovery Allowed: Yes
Rate of Amortization: 5 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

The Illinois CC allowed recovery only of firmly established cancellation costs which at the date of decision amounted to less than 40% of estimated total costs.

Company: Union Electric Company
Agency: Iowa State Commerce Commission
Case No: RPU-83-14
Date of Decision: 12/28/83

Plant Name: Callaway 2
Plant Type: Nuclear

Sunk Costs Involved: $2.7 million
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Comments:

The Iowa SCC denied cost recovery in this case without prejudice. The Hearing Examiner noted that the sunk costs were not firm estimates, and therefore a decision on cost recovery would not be appropriate.

Company: Union Electric Company
Agency: Missouri Public Service Commission
Case No: ER-83-163
Date of Decision: 10/21/83

Plant Name: Callaway 2
Plant Type: Nuclear

Sunk Costs Involved: $63 million
Cost Recovery Allowed: No
Rate of Amortization:
Treatment of Tax Effects:
Unamortized Balance in Rate Base:

Comments:

The Missouri PSC conclusion that it could not legally allow recovery of costs for Callaway No. 2 was based on its reading of Proposition I, a Missouri statute forbidding rates based on CWIP. The PSC recognized that there were "meritorious arguments . . . both for and against the position that" the statute forbade recovery of costs of cancelled plant, and stated "that the question (would) ultimately be decided by a reviewing court on appeal." Since it could not obtain a court determination by declaratory judgment or similar method before deciding, the PSC, reasoning that "as a practical matter (it) must adopt some position," adopted its General Counsel's conclusion that the statute barred recovery. This result had, to the PSC, the merit of "preserv(ing) the status quo allowing no recovery pending appeal," while adoption of a contrary policy could cause ratepayers to pay rates based on unlawful charges with no assurance of refunds.

The PSC decision is being appealed by the company to the Missouri Circuit Court.

special report

Company: United Illuminating
Agency: Connecticut Department of
Public Utility Control
Case No: 83-03-01
Date of Decision: 8/22/83

Plant Name: Pilgrim 2
Plant Type: Nuclear

Sunk Costs Involved: $14.7 million
Cost Recovery Allowed: Yes
Rate of Amortization: 2 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

The Connecticut DPUC, in the absence of a showing of imprudence, allowed recovery of full project costs. The company had not requested a return to be earned on the unamortized balance. A two year amortization period was chosen to limit to four years the period during which the shareholders would earn no return on their sunk investment, since amortization did not start until two years after the cancellation date. This decision is consistent with the DPUC's treatment of the Northeast Utilities investment in the previously cancelled Montague nuclear project.

Company: Virginia Electric Power Company
Agency: North Carolina Utilities Commission
Case No: E-22, Sub 273
Date of Decision: 12/5/83

Plant Name: Surry 3 & 4
North Anna 3 & 4
Plant Type: Nuclear

Sunk Costs Involved: $30 million
Cost Recovery Allowed: Yes
Rate of Amortization: 10 years
Treatment of Tax Effects:
Unamortized Balance in Rate Base: No

Comments:

The North Carolina UC allowed recovery of cancellation costs associated with North Anna 3 over a 10 year period with no rate base treatment for the unamortized balance. This treatment is consistent with the treatment allowed VEPCO for its cancellation of Surry 3 & 4 and the NC UC reaffirmed that treatment in this case. Moreover, the NC UC altered its previously announced treatment of North Anna 4 cancellation costs, which allowed rate base treatment for senior debt, to conform with the treatment allowed in this case.

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5. To date, what is the cost of the cleanup of the Three Mile Island nuclear plant? To what extent have ratepayers in Pennsylvania and New Jersey shared in those costs?

TMI cleanup costs, as of March 31, 1984 (latest available data) totalled $426,685,000. Of this amount, GPU system ratepayers have borne $56,554,000, which is around 13%. In a March, 1984, order, the New Jersey commission included a contribution to TMI cleanup in Public Service Electric & Gas Co's. cost of service. Since this is a recent order, the amount contributed to date presumably is not large.

6. Does the current FERC rule on CWIP provide utilities with an incentive, and the financial ability, to build plants that are not needed? What are the regulatory and financial constraints on building plants that are not needed?

As a result of financial trends over the past decade, most utilities lack an economic incentive to build any new plant, with or without CWIP in rate base. This outcome is a direct result of their inability to earn a market rate of return on their investment, i.e., the cost of financing new plant generally exceeds earned rates of return on such investments. Inclusion of CWIP may serve to eliminate a growing bias against capital intensive but more efficient and cost-effective generating alternatives as measured over the life of the project. In this sense, including CWIP in rate base will permit utility management to select the most cost-effective resource options without regard to financial constraints. This assures ratepayers the lowest cost electric power supply.

The FERC final rule on CWIP affords the Commission an opportunity to examine more closely the reasonableness of a utility's construction program, each time the utility seeks to include those costs in rate base. The final rule requires each filing utility to include a statement of its program for providing reliable and economic power for the next ten years. In addition, the utility must discuss its assessment of the relative costs of adopting alternative strategies for meeting demands for service, including an analysis of alternative sources of power supply (such as cogeneration, small power production, conservation and increased purchased power) and an explanation of why the program adopted is prudent and consistent with a least-cost energy supply program. Thus, the FERC staff and interested parties in a rate proceeding will have an opportunity to review and judge the prudency of costs as those costs are incurred and claimed in rate base, rather than at a later point in time when a project is completed or a decision is made to abandon it.

7. EEI has testified that it is clear from a variety of studies that ratepayers pay less over the life of a generating plant if the utility is permitted to include CWIP in the rate base. Please describe the studies that were conducted, and illustrate your conclusion by providing comparative data for a typical utility that would commence construction in 1984 of a standardized coal-fired generating plant.

To demonstrate the ratepayer benefits that can result under a policy of including full CWIP in rate base, EEI retained an independent consultant, ICF, to conduct a financial and revenue requirements study for two hypothetical utilities undertaking representative construction programs. The results of this study are attached.

Detailed, year-by-year financial and revenue requirements impacts (with and without CWIP in rate base) were computed for the two utilities. The impacts of alternative CWIP policies were measured in terms of several key variables:

(a) total revenue requirements;
(b) net present value of revenue requirements;
(c) average price of electricity;
(d) interest coverge ratios;
(e) internal cash flow; and
(f) quality of earnings.

The first three variables provide a measure of the impact on ratepayers of including CWIP in rate base while the other three variables are key measures of the utility's ability to finance its construction program.

The attached study concludes that the inclusion of CWIP in rate base improves utilities' cash flow and financial indicators during the construction period. Utilities with higher quality of earnings or better interest coverage ratios and higher internal cash flow will be able to borrow money on more attractive terms to finance construction. In other words, their cost of raising new capital will be lower. This reduction in the utilities' cost of capital during the construction period because of the inclusion of CWIP in rate base, also reduces rates to ratepayers over the life of the facility. Both on an aggregate dollars basis, and when the time value of money is considered, the inclusion of CWIP in rate base is cheaper for ratepayers than the exclusion of CWIP from rate base. Virtually the same conclusion has been reached in the enclosed study, Regulatory Treatment of Construction Work in Progress: A Comparative Analysis, which was performed by the Texas Public Utility Commission staff in 1982. This study reaches the general conclusion that:

> "(1) Under all circumstances total ratepayer costs are lower over the life of a power plant when CWIP is included in rate base;
>
> (2) Based on the time value of money, the present value of ratepayer costs is lower when CWIP is included in rate base, if the ratepayer's after-tax opportunity cost of funds is lower than the utility's before-tax cost of funds;
>
> (3) The desirability of CWIP inclusion, from any particular ratepayer's point of view, depends on that ratepayer's opportunity cost of funds and the number of years the ratepayer expects to live in Texas."

STATEMENT OF ROBERT M. SPANN
ON S.817, S.1069 AND H.R. 555
"CONSTRUCTION WORK IN PROGRESS POLICY ACT OF 1983"
BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

My name is Robert M. Spann. I am a Principal and member of the Board of Directors of ICF Incorporated, a Washington, D.C. consulting firm. One of my area of specialization is electric utility rate design and financial forecasting. I have provided expert testimony before a number of state public utility commissions. I have served as a consultant to electric utilities, state public utility commission staffs, consumer groups, large users of electricity, as well as cogenerators and small power producers. The areas of the expert testimony I have presented include: electric utility financial forecasting, electric utility rate design, electric utility demand forecasting, rates for purchases of capacity and energy from cogenerators, construction work in progress in rate base, and rate of return.

I have reviewed the April 12th statement of J. Bertram Solomon before this Committee. Mr. Solomon concludes from a series of tables and exhibits he prepared that "... when the time value of money to the customers of utilities is taken into consideration, including CWIP in rate base will also be more costly to consumer than not including CWIP in the rate base." I have reviewed Mr. Solomon's tables and calculations. Mr. Solomon has seriously misinterpreted his own data. His data do not indicate that CWIP will be more costly to consumers when the time value of money is taken into consideration.

Specifically, all that Mr. Solomon's data shows is:

1. Including CWIP in rate base leads to higher rates during the construction period and lower rates during the period that the plant is in-service relative to the alternative of not including CWIP in rate base.

2. The present value of revenue requirements over the life of the facility is the same regardless of whether CWIP is included in rate base or is not included in rate base.

Financial and Electric Rate Impacts of Placing Construction Work In Progress In Rate Base

Prepared for
Edison Electric Institute
Prepared by
ICF Incorporated
April 1984

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What Placing CWIP in Rate Base Means

- Placing CWIP in rate base means that the utility recovers its financing charges associated with construction currently from ratepayers through the return component of its rates, rather than adding them to the cost of construction for recovery when the facility is in-service.
- Not placing CWIP in rate base means that the utility earnings are credited with a *non-cash* return on facilities under construction. This non-cash credit (known as AFUDC) is added to the cost of the plant and recovered over the service life of the investment.
- As such, the issue of placing CWIP in rate base has to do with the timing of the recovery of the financing charges associated with construction.
- The purpose of this presentation is to demonstrate the impacts of CWIP in rate base on ratepayers and utilities.

Potential Ratepayer Impacts of Placing CWIP in Rate Base

- Consumer pays lower rates over the service life of the facility, since the rate base is not permanently increased by the amount of financing charges associated with construction.
- Consumer pays a small increase each year as facility is being built rather than face a large increase in rates when the facility enters service. As such, placing CWIP in rate base leads to a more gradual time pattern of rates and helps avoid or mitigate "rate shock."
- Placing CWIP in rate base improves the financial position of utilities. This allows utililities to raise debt and equity capital at lower costs, thereby tending to lower electricity rates over the life of the facility.

Potential Impacts on Utility of Placing CWIP in Rate Base

- Raises internal cash flow, thus lowers external financing requirements.
- Improves financial health of utility, thereby lowers costs of raising debt and equity capital.
- Allows facilities to be constructed when they are needed by avoiding the possibility that capital constraints might prevent construction of required facilities.

CWIP and the Cost of Debt and Equity Capital to Utilities

- Numerous studies have shown that the stronger the financial position of any corporation (regulated or unregulated), the lower the costs of raising debt and equity capital.
- The relevant comparison is not between placing CWIP in rate base and not placing CWIP in rate base, but between placing CWIP in rate base and
  - not placing CWIP in rate base and paying higher costs for financing
  - adoption of other regulatory policies which improve cash flow such as allowing utilities higher rates of return to maintain utility financial performance and same cost of debt and equity as if CWIP was placed in rate base.

Financial Indicators, CWIP and Cost of Debt and Equity to Utilities

- Table 1 shows the average levels of key financial indicators by bond rating groups.
- The lower the bond rating, the higher the cost of raising debt and equity capital. For example, over the period 1972-1981, utilities with BAA bond ratings paid an average of 69 basis points higher interest rates than utilities with A bond ratings.
- Placing CWIP in rate base increases interest coverage and internal cash generation and lowers AFUDC as a percentage of earnings during the construction period. As such, CWIP helps maintain higher bond ratings resulting in lower debt and equity costs.
- Alternative regulatory policies such as higher rates of return can achieve the same result. One question addressed in this study is which policy is cheaper for ratepayers in the long run.

Table 1
Five-Year Average Financial Indicators by Bond Rating
(1978-1982)

	Rated AA	Rated A	Rated BAA and Lower
Pre-tax Interest Coverage (Less AFUDC)	3.12	2.35	1.91
Post-tax Interest Coverage (Less AFUDC)	2.15	1.77	1.53
AFUDC as a % of Earnings	25.97	43.59	58.70
Internal Cash Generation as a % of Construction Expenditures	62.67	41.31	34.58
CWIP as a % of Net Plant	17.84	24.65	26.59

SOURCE: "Electric Utility Industry Credit and Equity Analysis," The First Boston Corporation, July 1983. Statistics are derived using a sample of 119 electric and combination companies.

Projecting Impacts of CWIP

- Two illustrative utility situations chosen for analysis.
- Both utilities currently have 4,600 MW peak demands and are building a 600 MW unit, planned to enter service in 1988.
- The utilities differ in the need for new generating plants in the 1990s. Utility A will not build additional capacity in the 1990s. Utility B will build additional capacity of two 300 MW units to enter service in 1992 and 1996. The Technical Appendix details the assumptions used in this analysis.

Methodology for Determining Ratepayer Impacts

- Simply examining rates with and without CWIP in rate base may be misleading, since CWIP affects cost of capital.
- The appropriate comparison is between placing CWIP in rate base and
  - allowing the utility's bonds to be downgraded, resulting in higher costs of capital
  - alternative regulatory policies (such as higher allowed returns) which maintain utility financial indicators and avoid downgrading of bonds.
- The following results assume policies are implemented beginning in 1985.

Figure 1
Projected Interest Coverage With and Without CWIP in Rate Base

Utility A

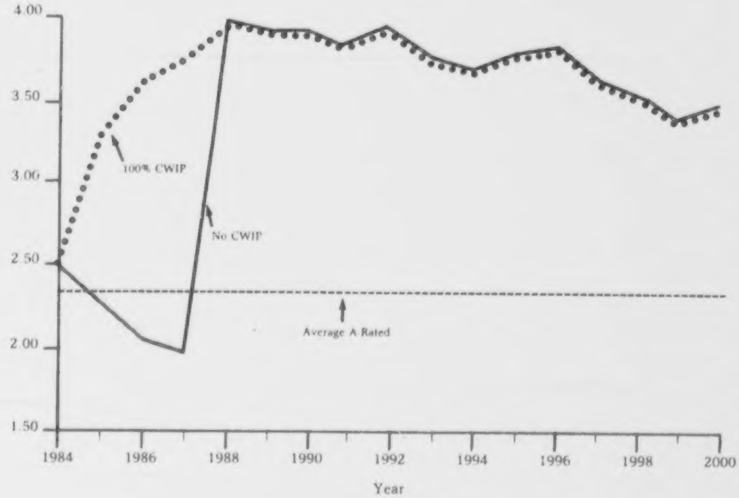


Figure 1
Projected Interest Coverage With and Without CWIP in Rate Base

Utility B

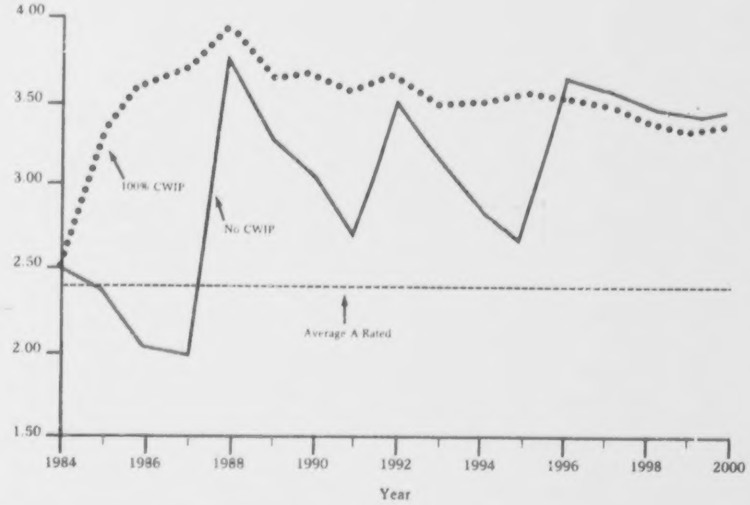


Figure 2
AFUDC as a Percentage of Earnings With and Without CWIP in Rate Base

Utility A

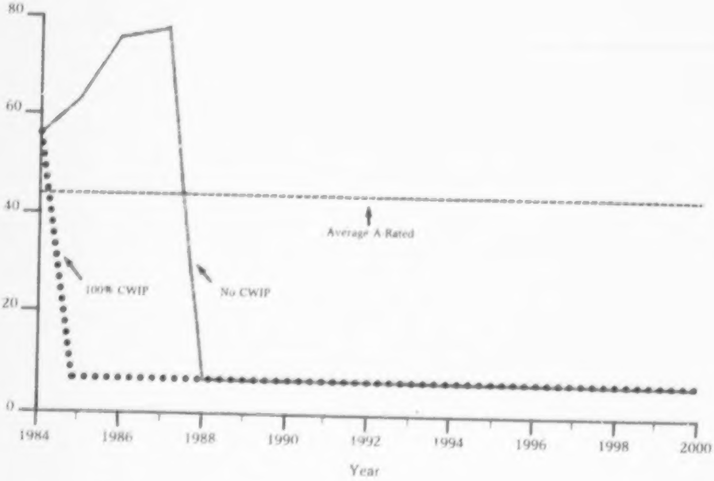
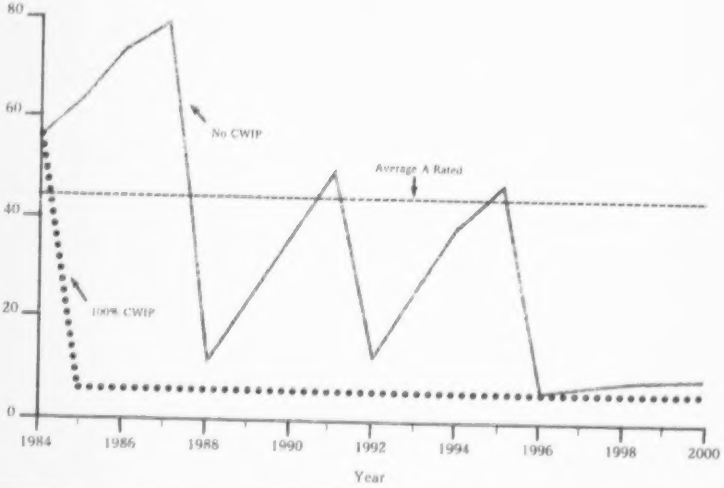


Figure 2
AFUDC as a Percentage of Earnings With and Without CWIP in Rate Base

Utility B



Impacts of CWIP in Rate Base on Interest Coverage

- Without CWIP in rate base, interest coverage (pre-tax, less AFUDC) during construction period is insufficient to maintain A bond ratings (see Figure 1).
- In some years, interest coverage may fall below minimum interest coverage legally required by bond indentures.
- With CWIP in rate base, cash flow is increased enough to keep interest coverage above the average level for A-rated utilities.

Impacts of CWIP in Rate Base on AFUDC as a Percentage of Earnings

- AFUDC is a non-cash accounting credit to earnings which is added to the cost of the facility. As such, it provides no actual cash flow to the utility until the facility is in-service.
- Many financial analysts, therefore, consider AFUDC lower quality earnings. AFUDC as a percentage of earnings is thus an indicator of earnings quality, as it gives the percentage of earnings which are actually only non-cash credits.
- Without CWIP in rate base, AFUDC as a percentage of earnings for both utilities is higher than that currently maintained by the average A-rated utility (see Figure 2).
- Placing CWIP in rate base increases cash flow and the quality of earnings, thereby lowering the costs of financing new plants.

Impact of CWIP in Rate Base on Internal Cash Generation as a Percentage of Construction Expenditures

- This financial indicator measures the ability of the utility to finance construction with funds from current operations as opposed to having to raise capital from new stock or bond issues.
- Figure 3 shows internal cash generation as a percentage of construction expenditures for both utlities A and B, with and without CWIP in rate base.
- Without CWIP in rate base, both utilities raise substantial amounts of capital externally—much more than the average A-rated utility raises today.
- With CWIP in rate base, cash flow increases so that both utilities raise higher amounts of capital internally than the average A-rated utility raises today.

Impact of CWIP in Rate Base on Electric Rates

- Figure 4 shows three projections of electric rates (real 1984 MILLS/kWh) for Utility A and B.
  - CWIP in rate base
  - no CWIP in rate base, but higher allowed rates of return so that utility maintains A bond rating
  - no CWIP in rate base and downgrading of utilities' bonds to BAA with attendant higher costs of debt and equity capital.
- With CWIP, rates are higher during the construction period, but lower over the remainder of the period.
- CWIP leads to a more gradual rise in rates and helps mitigate or avoid "rate shock" when new plant enters service.

Comparison of CWIP Versus Higher Allowed Rates of Return

- Since CWIP leads to higher rates now and lower rates later, the comparison between CWIP and alternative regulatory policies is just like any other savings or investment decision.
- Table 2 shows the ratio of the present value of revenue requirements with CWIP to the present value of revenue requirements without CWIP and higher allowed rates of return. This table compares two alternative regulatory improvements which would maintain the utilities bond ratings.
- For Utility A, the present value of revenue requirements with CWIP is lower than the present value of revenue requirements with higher allowed returns at all discount rates less than 20 percent.
- For Utility B, the present value of revenue requirements with CWIP is lower than the present value of revenue requirements with higher allowed returns at all discount rates less than 17.0 percent.

Figure 3
Internal Cash Generation as a Percentage of Construction Expenditures
With and Without CWIP in Rate Base

Utility A

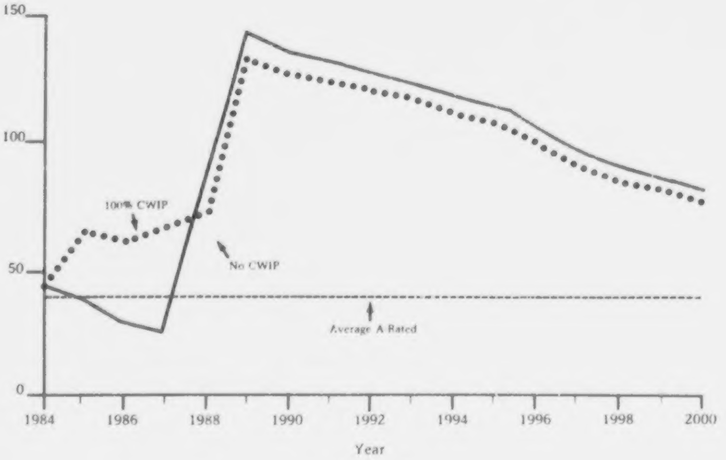


Figure 3
Internal Cash Generation as a Percentage of Construction Expenditures
With and Without CWIP in Rate Base

Utility B

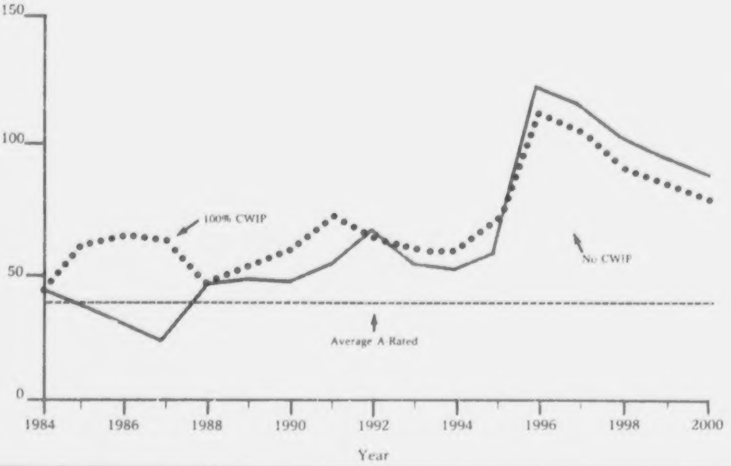


Figure 4
Impact of CWIP in Rate Base on Electric Rates
(Real 1984 MILLS/kWh)

Utility A

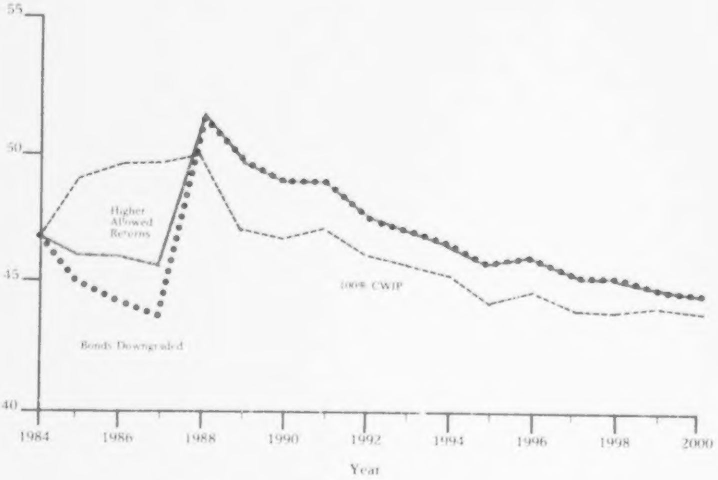


Figure 4
Impact of CWIP in Rate Base on Electric Rates
(Real 1984 MILLS/kWh)

Utility B

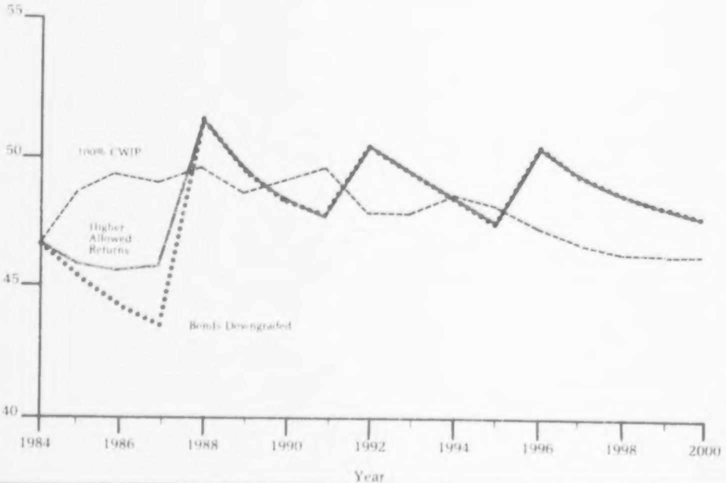


Table 2
Comparison of Present Value of Revenue Requirements Over the Period 1984-2015. CWIP Versus Higher Allowed Rates of Return (millions of dollars)

	Utility A			Utility B		
Discount Rate	(1) CWIP	(2) Higher Return	(3) Ratio (1)/(2)	(4) CWIP	(5) Higher Return	(6) Ratio (4)/(5)
0	128,334	129,079	.994	127,499	128,997	.998
5	45,787	46,109	.993	46,001	46,498	.989
10	20,596	20,739	.993	20,894	21,047	.993
15	11,487	11,545	.995	11,716	11,741	.998
20	7,579	7,596	.998	7,739	7,714	1.003
Break Even Rate of Return			Above 20%			17.0%

Comparison of CWIP Versus Downgrading of Utility Bonds

- Table 3 shows the ratio of the present value of revenue requirements with CWIP to the present value of revenue requirements without CWIP and a bond downgrading (with attendant higher costs of debt and equity capital).
- For Utility A, the present value of revenue requirements with CWIP is lower than the present value of revenue requirements without CWIP and a bond downgrading at all discount rates less than 14.7 percent.
- For Utility B, the present value of revenue requirements with CWIP is lower than the present value of revenue requirements without CWIP and a bond downgrading at all discount rates less than 16.1 percent.

Conclusions

- Placing CWIP in rate base results in lower rates to ratepayers (in present value over the life of the plant) than alternative policies such as higher allowed rates of return or downgrading of utility bonds.
- Placing CWIP in rate base results in a series of gradual rate increases rather than one large increase when the plant enters commercial operation.

Technical Appendix

This appendix details the assumptions used for the analysis of the impacts of CWIP in rate base. The analysis shows the impacts of alternative assumptions on two generic utilities labeled Utility A and Utility B. The assumptions used for each utility are identical except regarding the construction of production units in the 1990s. Each utility assumes a 600 MW unit coming on line in 1988, while only Utility B assumes two additional 300 MW units coming on line in 1992 and 1996.

Table 3
Comparison of Present Value of Revenue Requirements Over the Period 1984-2015, CWIP Versus Downgrading of Utility Bonds (millions of dollars)

	Utility A			Utility B		
Discount Rate	(1) CWIP	(2) Down-grading	(3) Ratio (1)/(2)	(4) CWIP	(5) Down-grading	(6) Ratio (4)/(5)
0	128,334	128,959	.995	127,499	129,341	.986
5	45,787	46,015	.995	46,001	46,603	.987
10	20,596	20,664	.997	20,894	21,071	.992
15	11,487	11,485	1.000	11,716	11,735	.998
20	7,579	7,545	1.005	7,739	7,695	1.006
Break Even Rate of Return			14.7%			16.1%

The analysis starts in the beginning of 1984. Each utility has an asset base of about $1.6 billion. The total amount already spent for the 1988 unit through January 1984 amounts to $332 million. The expenditures through 1988 are shown below (millions of dollars, less AFUDC):

1984—75.4
1985—63.4
1986—55.0
1987—50.0

The resulting cost assuming no CWIP is allowed in rate base is $758 million ($1,260/kW). The resulting cost with all CWIP allowed in rate base beginning in 1985 is $607 million ($1,010/kW).

The expenditures for the additional units for Utility B are (millions of dollars, less AFUDC):

1992 Unit	
1984	.88
1985	.50
1986	.86
1987	4.34
1988	124.08
1989	184.74
1990	162.76
1991	78.98

1996 Unit	
1988	1.16
1989	.66
1990	1.10
1991	5.66
1992	161.30
1993	240.16
1994	211.58
1995	102.66

The resulting cost assuming no CWIP allowed in rate base is $680 million ($2,270/kW) for the 1992 unit and $889 million ($2,960/kW) for the 1996 unit. Similarly, the resulting cost assuming all CWIP is allowed in rate base starting in 1985 is $559 million ($1,860/kW) for the 1992 unit and $725 million ($2,420/kW) for the 1996 unit.

The capital structure and financing cost assumptions are:

	Percent of Capital Structure	Percent Return
Long Term Debt	.47	11.75
Common Equity	.41	14.50
Preferred Stock	.12	11.25

The embedded costs of existing long-term debt and preferred stock are 9.59 and 8.96, respectively.

For the case results in which a higher return on equity was allowed, the allowed returns are raised enough to allow the utilities to maintain a pre-tax, less AFUDC, interest coverage of 2.5. This required raising the allowed returns to 16.5, 19.5, and 19.1 in 1985, 1986, and 1987, respectively. For the case results when downgrading of the utility bond rating is assumed, the rating is assumed downgraded beginning in 1985. This downgrading is assumed to continue until major construction is completed (1988 for Utility A and 1996 for Utility B). The effect of downgrading is assumed to be an addition of 65 basis points to the utilities cost of new bonds, new preferred stock, and common equity. This penalty roughly corresponds to the average interest rate yield differential of 69.2 basis points between bonds rated A and BAA over the period 1972-1981.

A dividend payout ratio of 72 percent was assumed. A post-tax AFUDC rate treatment is used where the AFUDC rate in each year is calculated as the after-tax embedded cost of capital. Total AFUDC is calculated based on the year average level of CWIP. An historical year rate base is assumed except for years in which major plants come on line. In these years, the rate base is increased to include the costs of the new plants. Working capital is calculated as one eighth of the annual operation and maintenance expense in each year.

The following tax assumptions are used:

Federal Income Tax Rate	: 46%
State Income Tax Rate	: 6%
Revenue Tax	: 6.8%
Investment Tax Credit Rate:	: 10%

Finally, the presentation stated that numerous studies have shown that the stronger the financial position of any corporation (regulated or unregulated), the lower the costs of raising debt and equity capital. The following three articles are examples of such studies:

1. George E. Pinches, J. Clay Singleton, and Ali Jahankhani, "Fixed Coverages as a Determinant of Electric Utility Bond Ratings," *Financial Management*, Summer 1978.
2. Shyam Bhandari, Robert M. Soldofsky, and William J. Boe, "Bond Quality Changes for Electric Utilities: A Multivariate Analysis," *Financial Management*, Spring 1979.
3. Robert Trout, "The Regulatory Factor and Electric Utility Common Investment Values," *Public Utilities Fortnightly*, November 22, 1979.

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Public Utility Commission of Texas

MEMORANDUM

TO: Commissioners

FROM: Samuel C. Hadaway

DATE: November 5, 1982

SUBJECT: Construction Work in Progress (CWIP) Study

Attached is our evaluation of the CWIP issue and its effects on Texas ratepayers. The study was done under my supervision with no predisposition as to what the outcome should be. Quite frankly, I was surprised by the strength of the results supporting CWIP inclusion in rate base.

The whole issue is pretty technical, and by necessity the paper contains some technical terminology. The bottom line, however, is simple: Texas ratepayers who expect to live in the State six to eight years are better off with CWIP in the rate base than with it out. Table III on page 17 summarizes the data that support this conclusion.

From reviewing testimony and the published literature, we believe that this study is the most complete analysis of CWIP that has been done. For example, a widely noted CWIP analysis that appeared in the Public Utility Fortnightly (Trout, May 10, 1979) failed to include federal income taxes and thus understated the ratepayer cost of excluding CWIP. Similarly, a 1980 study by the Comptroller General of the United States included taxes, but failed to note that the crux of the decision is how long the ratepayer will continue to live in the state. We believe that we have addressed these issues properly.

Let me know if I can answer any questions or if you would like to discuss the paper. I would appreciate any comments or suggestions you might have.

Regulatory Treatment of Construction Work in Progress:

A Comparative Analysis

Prepared by

Samuel C. Hadaway
Brenton L. Heidebrecht
and
Jeffrey L. Nash

Economic Research Division

Public Utility Commission of Texas

November 1982

Regulatory Treatment of Construction Work in Progress

A Comparative Analysis

EXECUTIVE SUMMARY

This paper examines alternative regulatory treatments of the construction work in progress (CWIP) issue. The point of contention is whether or not CWIP should be included in a regulated utility's rate base to earn a current cash rate of return. An alternative is to exclude CWIP from rate base and capitalize construction period carrying costs (interest and dividends on construction funds) to be recovered after construction is complete.

The paper provides a verbal discussion of the CWIP issue and develops a cost-benefit framework (the PUC CWIP Analysis Model) to evaluate alternative CWIP treatment scenarios. The model determines specific ratepayer impacts resulting from varying assumptions about utility capital costs and ratepayers' opportunity costs for funds.

Three general conclusions are reached:

(1) Under all circumstances total ratepayer costs are lower over the life of a power plant when CWIP is included in rate base;

(2) Based on the time value of money, the present value of ratepayer costs is lower when CWIP is included in rate base, if the ratepayer's after-tax opportunity cost of funds is lower than the utility's before-tax cost of funds;

(3) The desirability of CWIP inclusion, from any particular ratepayer's point of view, depends on that ratepayer's opportunity cost of funds and the number of years the ratepayer expects to live in Texas. The indifference point, where the ratepayer is equally satisfied with or without additional CWIP inclusion, ranges between five and twenty-two years in the examples that follow, depending on the specific opportunity cost of funds selected.

The results indicate that major security downratings for utility bonds and stocks should be avoided, as required by the financial integrity test of Section 41 of PURA. Under the most realistic assumptions in the examples that follow, the typical ratepayer who expects to live in Texas for at least six or seven years should prefer to have at least some CWIP included in rate base. This result, in combination with various system reliability/efficiency issues and rate stability/price signal and conservation issues, supports flexible regulatory authority with respect to CWIP treatment.

Regulatory Treatment of Construction Work in Progress: A Comparative Analysis

I. INTRODUCTION

The purpose of this paper is to examine the various impacts of including construction work in progress (CWIP) in a regulated utility company's rate base. The question of CWIP treatment has become a topic of debate in Texas in recent years, as utility companies have embarked on major construction programs to meet the growing demand for electrical energy in Texas. The central issue in the controversy is: "Who should pay the carrying costs (interest, dividends, etc.) on capital required during the construction period?" If CWIP is included in the rate base, these carrying costs are paid out of current rates. If CWIP is not included, the utility must borrow additional funds to pay the carrying costs, with the additional borrowings recovered from future ratepayers when the construction program is completed.

In addition to the current versus future ratepayer impact, the CWIP decision also may affect the financial condition of the utility company. If CWIP is not included in the rate base, given the present size of construction programs and the high level of borrowing costs, additional borrowings may increase the cost of a generating plant by 30 percent or more over a seven to ten year construction period. In many cases the additional cost to be borne by the utility is found to be unacceptable by the investment community, resulting in bond quality downgradings and higher required capital costs, ultimately borne by the utility's ratepayers. The comparative analysis contained in this paper is intended to evaluate the ratepayer impact of various regulatory treatments of construction work in progress.

To address the CWIP issue, the paper is organized into four additional sections. Section II will define construction work in progress, discuss the allowance for funds used during construction (AFUDC), and review the current regulatory treatment of CWIP. Section III will review and discuss arguments for and against the inclusion of CWIP in the rate base. Section IV will describe and apply the Texas PUC CWIP Analysis Model. The model is used to evaluate the effects on the ratepayer of including various levels of CWIP in a utility company's rate base. The final section will summarize the findings and offer a conclusion regarding construction work in progress in the rate bases of utilities in Texas.

II. WHAT IS CONSTRUCTION WORK IN PROGRESS AND HOW IS IT TREATED TODAY?

Before the pros and cons of CWIP can be argued, a definition of construction work in progress is necessary, along with an explanation of what is meant by inclusion in rate base. A utility company operating within the state of Texas is authorized by statute to earn a rate of return on its rate base. The Public Utility Regulatory Act (PURA) and the Commission's Substantive Rules define "rate base" as the adjusted value of invested capital used and useful in rendering service to the public. The major components of rate base are generation, transmission, and distribution facilities that are presently providing service to consumers. In addition to facilities that are currently providing electrical service, Section 41 of PURA further provides that plant under construction may be included in the utility's rate base, where necessary to maintain the company's financial integrity. Money invested in not yet completed construction is thus called construction work in progress (CWIP).

Equitable treatment of the CWIP issue is related to the service obligation of a utility company. Meeting its service obligation may require a utility company to build additional facilities at times and in such magnitudes that the financial health of the utility is strained. It is even conceivable that a utility might be required to construct economically undesirable facilities (from an investment standpoint) to meet customer demand or to reduce customer fuel costs. Such necessities are not important considerations in nonregulated industries. The decision by General Motors or U.S. Steel to build a new assembly or smelting plant is based solely on economics and management's judgement of market potential. The obligation to serve, and the long lead times associated with building new power plants, make the construction-investment decision a totally different process for a utility company. These considerations are obviously a part of the motivation for PURA's Section 41 CWIP inclusion - financial integrity standard.

By rate case experience, the Public Utility Commission has defined financial integrity (and thereby determined the level of CWIP inclusion in rate base) by evaluating certain financial ratios that are indicative of a utility's financial condition. From a mechanical perspective, increments of CWIP are added to rate base (providing additional return dollars) until the key financial ratios achieve the minimum levels prescribed by major utility bond rating services. Among the financial indicators most closely monitored by the rating agencies are fixed charge coverage, or the utility's ability to pay required interest on debt; the percentage of construction funds generated from internal operations; and the percentage of earnings coming from the allowance for funds used during construction (AFUDC), a noncash accounting entry that cannot be used to meet current obligations.

Maintenance of a utility's financial health may be a desirable goal from several interrelated perspectives. If a utility company has a low quality rating, not [illegible] difficult to find investors willing to purchase that utility's debt issues (bonds), but also that utility must pay a greater cost for both debt (higher interest rates) and equity capital (return on equity) to encourage investment. Capital market participants extract a higher cost to compensate for the greater risk and weaker financial condition associated with the company. In turn, the higher cost of capital must be recovered from ratepayers through the utility's cost of service. For this reason the maintenance of sound quality ratings provides benefits to utility company investors and ratepayers alike.

During periods of heavy construction and high interest rates, the CWIP inclusion/exclusion decision becomes a key factor in the financial condition of a utility company, and thus directly affects the cost of capital ultimately paid by ratepayers. A list of state commissions that allow inclusion of CWIP in rate base is shown in Table I.

An additional consideration in the CWIP issue is how construction not included in rate base is treated. The amount of CWIP that is not included in rate

TABLE I

States Including Some CWIP in Rate Base

Alabama
Arizona
Arkansas
Colorado
Delaware
Florida
Georgia
Illinois
Kentucky
Louisiana
Maryland
Michigan
Minnesota
Mississippi
Nevada
New Jersey
New Mexico
New York
North Carolina
Ohio
Oklahoma
Pennsylvania
South Carolina
Tennessee
Texas
Utah
Vermont
Virginia
Washington
Wisconsin

Source: Merrill Lynch Quarterly Regulatory Report, September 1982 base accrues an allowance for funds used during construction (AFUDC). AFUDC is the carrying cost (interest, dividends, etc.) associated with new construction that is not yet in the rate base and is not earning a cash return. The accounting practice of capitalizing carrying costs—charging an allowance for funds used during construction to plant and crediting income for an equal amount—increases the utility's reported net income, but does not give rise to present cash flow.

AFUDC accrual creates a claim on future revenues. For example, if a $100 construction investment in plant (CWIP) is not included in rate base, that investment accrues AFUDC at approximately the company's cost of new capital; assume a 10 percent rate for this example. After one year the utility would recognize $10 ($100 x 10%) of AFUDC earnings, and the CWIP account would increase to $110. Because AFUDC earnings currently provide no cash, investors generally consider the quality of such earnings to be inferior to that of ordinary operating revenues. When the newly constructed facility becomes operational and is transferred from CWIP to plant in service, the addition to rate base on which ratepayers must pay a return is $110 (construction cost plus accrued AFUDC) rather than the $100 actually expended on physical construction. Through the AFUDC process, due to high compounded carrying costs, ratepayers eventually pay much more than the direct costs of building a power plant, if CWIP is not included in rate base during construction.

III. ARGUMENTS FOR AND AGAINST CWIP INCLUSION

One of the first arguments proffered by opponents of CWIP inclusion in rate base is that present ratepayers should not pay a return on plant that is not already producing electricity. In other words, the practice of including in progress in a utility's rate base is contrary to the principle of e only on "used and useful" property. Opponents further argue that CWI unfair to present ratepayers because they may move away or die, an receive a benefit from new plants even after those plants are placed in Additionally, it is noted that a portion of the growth in demand for ele which has resulted in the need for additional generating facilities, is caused in-migration of job seekers to the Southwest, particularly to Texas, that occurred over the past several years and may be expected in the future.

These arguments are countered by advocates of including CWIP who clai present ratepayers enjoy low cost service from utility plants supported by investors and ratepayers many years ago. Such "let the other person pay" attitudes will lead, according to those in favor of rate base treatment of CWIP, to inadequate and unreliable utility service. A relevant analogy presented by supporters of CWIP is that public highways, schools, and other facilities are supported by taxes not directly tied to services received from using the public facilities. In a similar vein, it is argued that the inclusion of CWIP produces a more reliable, more long-run cost efficient electrical system that benefits consumers in ways well beyond their direct electrical service. New business location decisions in the State are tied to a reliable, long-run cost efficient electrical system. Correspondingly, the job formation and general prosperity associated with a healthy economic climate are related to the financial condition of the State's utility companies.

Dr. Eugene F. Brigham, Director of the Public Utility Research Center at the University of Florida discussed the problem and importance of utility construction programs before the Florida Public Service Commission in the summer of 1982.[1] In his testimony Dr. Brigham pointed out that dollars invested in CWIP must come from investors in the form of debt and equity, and that dividends and interest must be paid throughout the construction period. According to Dr. Brigham, in the early 1960s, when CWIP was small relative to plant-in-service, companies were able to pay carrying costs on CWIP with little difficulty. Since the late 1960s, however, inflation has driven up both capital costs and new construction costs at the same time that utility companies have attempted to build either coal-fired or nuclear-powered generating facilities. These plants cost far more per unit of capacity and have much longer construction schedules than the previously dominant, but now operationally expensive, oil and gas plants. This construction has resulted in CWIP levels increasing from 8 to 10 percent of plant-in-service in the 1960s, to a ratio of greater than 50 percent in many instances today. With CWIP at this level, severe economic strains are placed on utilities if no CWIP is allowed in the rate base. By including CWIP in rate base, the return received on CWIP helps to pay financing charges on construction; or as Dr. Brigham states it, "Customers are being required to make a 'down payment' on the plants being built to serve them in the future."

Advocates of CWIP in rate base further argue that the pay as you go procedure sends more accurate price signals to consumers. Steady increases in utility bills during construction provide ratepayers a signal that utility service is growing more expensive. This approach is preferable to the "big shock" effect of a 50 to 75 percent one time increase, which may result from a major new plant coming on line, if no CWIP has been included in previous years. These more nearly correct price signals should encourage energy conservation and give consumers time to take other steps necessary to make their homes more energy efficient.

The importance of proper price signals can be demonstrated by an example in which no CWIP is included, and utility rates are stable for several years. During this time, energy grows relatively less expensive to the consumer as his income rises. As a result consumption continues to grow, encouraging the utility company to build new plant to meet the growing demand. When the new generating plant is completed and placed into service, rates rise dramatically as the cost of the new facility, plus accumulated AFUDC, is added to the rate base. Faced with suddenly higher electric bills, ratepayers reduce their energy consumption, and much to the displeasure of all concerned, it becomes clear that a much smaller generating facility would have sufficed.

IV. WHAT IS THE ULTIMATE COST TO RATEPAYERS?

To this point, arguments for and against CWIP have been discussed in terms of fairness and equity. The one consideration, however, that should be foremost to both sides of the issue is: "What is the ultimate cost to the ratepayer of including or excluding CWIP in regulatory practice?" To this end, a model has been developed by the PUC Staff that measures the costs of alternative CWIP treatments.

The CWIP Analysis Model

The Public Utility Commission's CWIP Analysis Model is a relatively straightforward system that relies on the concepts of CWIP, AFUDC, rate base, and carrying costs as discussed previously. The key inputs to the model are the level of construction, the amount of CWIP to be included in the rate base, a rate of return to be applied to the rate base, the AFUDC rate, and the ratepayer's opportunity cost of funds. The important output from the system is the economic cost of all future return, tax, and depreciation expenses (in terms of today's dollars) to be paid by consumers over the construction period and operating life of a new power plant. It is crucial that attention be focused on the present value of future costs (i.e., costs adjusted to take into account the time value of money) rather than absolute levels. If this distinction is not made, only the most general conclusions regarding CWIP can be drawn. Because the model incorporates present value concepts, a key input is necessarily the customer's opportunity cost of funds. This rate has two properties; first, it should reflect the rate of return customers could earn on alternative investments, and secondly, because residential utility payments are generally not tax deductible, it should be on an after-tax basis. Once all inputs are specified, the model can be run under "what if" conditions to measure the impact of any number of assumptions and CWIP scenarios.

Model Assumptions and Results

To analyze the various arguments, both pro and con, about the inclusion of CWIP in the rate base, numerous model runs were made. The construction cost data were taken from an actual construction program of a major utility in Texas, which is in the process of building a large coal-fired generating plant. This budget indicates a seven year construction period and that the plant will have a useful life of thirty years. The required rates of return, federal income tax treatment, and

AFUDC rates are patterned after actual rates and methods used in recent regulatory proceedings. Differences in capital costs, due to different investment quality ratings, are based on data compiled by Salomon Brothers (Table II), which reflect actual capital cost differences that have prevailed during unsettled market periods in recent years.[2] Various approaches to the ratepayer's opportunity cost of funds are discussed within the alternative CWIP scenarios that follow.

In general the results indicate that major security downratings for utility bonds and stocks should be avoided, as required by the financial integrity test of Section 41 of PURA. Under the most realistic assumptions in the examples that follow, the typical ratepayer who expects to live in Texas for at least six or seven years is better off in terms of current dollars by having CWIP included in rate base. This result in combination with the system reliability/efficiency issue and the rate stability/price signal and conservation issues discussed previously, supports flexible regulatory authority with respect to CWIP treatment.

Alternative CWIP Treatments

The remainder of this section will apply the CWIP Analysis Model to three different general situations associated with CWIP treatment. The first model application is a type of "straw man," designed to illustrate how the model works and to provide a basis for evaluating cases considered in the second and third applications. The second application is a set of model runs that depict costs associated with alternative quality ratings for the utility's securities. In these runs the ratepayer's opportunity cost of funds before tax is assumed to be equal to the

TABLE II

Interest Rate Yield Spreads Between Bonds of Various Rating Classifications Measured in Hundredths of a Percent (basis points)

	Aa-A	A-Baa	Aa-Baa
1972[a]	13	28	41
1973	19	31	50
1974	52	89	141
1975	82	169	251
1976	35	82	117
1977	21	36	57
1978	24	39	63
1979	36	58	94
1980	57	95	152
1981[b]	65	65	130
$\overline{x}$	40.4	69.2	109.6
σ_{n-1}	22.7	42.8	63.9
High	82	169	251
Low	13	28	41

[a] Source: Information for the years 1972 thru 1980 was obtained from Salomon Brothers - An Analytical Record of Yields and Yield Spreads.

[b] Source: 1981 information from Moody's Bond Record, June 1982.

utility's required rate of return; i.e., any current ratepayer funds saved by not including CWIP in rate base are assumed to be invested by the ratepayer in the utility's bonds and stock, with personal taxes to be paid on investment income by the ratepayer. Application three extends the example by assuming ratepayers can invest funds at rates ranging from those available on money market funds up to those charged on consumer finance loans.

Application I - CWIP Treatment Does Not Affect Utility or Ratepayer Costs
(A Straw Man)

Under all circumstances the compounding effect of AFUDC increases total ratepayer costs over the life of a power plant, if CWIP is not included in the rate base. Recall that when CWIP is not allowed a current cash return, the utility borrows additional money to pay interest and dividends on construction funds. These borrowed carrying costs are then added to the power plant's ultimate cost, increasing the total long-run cost to the ratepayer. A situation can be developed in which the ratepayer is not harmed by these additional costs, if the ratepayer can invest utility bill savings during the construction period at a high enough rate. For the ratepayer to be unharmed, his investment rate must offset the effect of accrued AFUDC and overcome the additional return, taxes, and depreciation that will be associated with a larger long-run power plant value.

Appendix Exhibits I-A and I-B demonstrate this "break even" situation. Here it is assumed that the utility's required return and AFUDC rate and the ratepayer's after-tax opportunity cost of funds are all equal to the utility's overall cost of capital. Furthermore, it must be assumed that the utility itself has a zero Federal income tax rate. Under these assumptions, the "Present Value of Total Revenue Requirements" for the thirtieth year (in the lower right-hand corner of Appendix Exhibits I-A and I-B) are exactly equal whether CWIP is included or not (although as noted previously the total revenue requirement is lower with CWIP included in ratebase). To be totally indifferent to the CWIP treatment in these tables, the ratepayer must also be assumed to live in the jurisdiction for the full thirty-year operating life of the power plant.

Obviously, this first application is unrealistically burdened with qualifying assumptions that do not obtain in the real world. The example does show, however, that in a theoretical sense, over the very long-run ratepayers and utility companies can be indifferent to regulatory treatment of CWIP. This situation results only when short-run funds saved for ratepayers by not including CWIP can be reinvested to offset all additional costs (AFUDC, return, taxes, and depreciation) that occur when CWIP is not included.

Application II: Ratepayer Costs When CWIP Treatment Affects the Utility's Cost of Capital

In the previous example it was assumed that the cost of capital remained fixed whether CWIP was included or not. In this application more realistic assumptions are applied. The utility's required rate of return and AFUDC rate are set at 13% when 100% of CWIP is included in rate base, 13.5% when 50% of CWIP is included, and 14.5% when zero CWIP is included.[3, 4] The ratepayer's tax rate is assumed to be 25%, and the utility's tax rate is the statutory 46% corporate level applied in regulatory proceedings.

Appendix Exhibits II-A, II-B, and II-C depict the costs associated with 100%, 50%, and 0% CWIP inclusion. As in the previous example, the total revenue requirement is highest for zero CWIP inclusion (II-C), next highest for 50% (II-B), and lowest for 100% (II-A). The present value total revenue requirement also declines in the same order. It should be noted, however, that on a present value basis (giving ratepayers the opportunity to invest short-run utility bill savings) a "crossover point" in years of utility service occurs. This crossover point represents the point at which a ratepayer is indifferent between one CWIP treatment and another. The ratepayer cost is higher for higher levels of CWIP inclusion before the crossover point, and lower afterwards.

This result reemphasizes the importance of the time value concept in evaluating alternative CWIP treatments. The crossover shows that in addition to the opportunity cost of funds, the ratepayer is affected by the length of time he may expect to live in a utility jurisdiction where CWIP is included in rate base. For a ratepayer who might expect to move out of the State or expire before the crossover point, additional CWIP inclusion is not desirable. The migration and intergenerational aspects of CWIP are addressed in detail in the third application of the model, which reviews crossover points in relation to various ratepayer opportunity costs for funds, and in the concluding section of the paper.

Application III: Ratepayer Costs When Investment Rates and Expected Tenure in a Jurisdiction Vary

This portion of the analysis applies the same assumptions as in Application II, except that each CWIP treatment is evaluated under four different assumptions about the ratepayer's opportunity cost of funds. The opportunity costs evaluated are after-tax rates of 6%, 9%, 12%, and 15%.[5] The various panels of Appendix Exhibit III illustrate the three different CWIP treatments and four different opportunity costs (twelve different model runs).

As in the previous examples, in each case the total revenue requirement and present value of total revenue requirement is lower for 100% CWIP inclusion than for either 50% or 0%, over the total thirty-year period. Under alternate ratepayer opportunity costs, however, the crossover point (at which the ratepayer is indifferent to CWIP treatment) varies substantially. Also, the varying crossover points demonstrate that the CWIP decision is not an "all or nothing" phenomenon. Under certain circumstances, ratepayers may prefer 50% CWIP inclusion to 0%, but not prefer 100% inclusion. This situation occurs when the ratepayer's expected tenure in the State is an intermediate number of years between the transient level (preferring zero CWIP) and the permanent resident tenure (generally preferring 100% CWIP inclusion).

The crossover points indicated by Exhibit III are summarized in Table III. Lower ratepayer opportunity costs indicate benefits from CWIP inclusion in earlier years. Ratepayers having a 6% opportunity cost prefer some CWIP inclusion if they expect to stay in the State as little as five years. At the high extreme, ratepayers with 15% after-tax investment opportunities may prefer no CWIP unless they expect to be in the State ten years, and prefer 100% CWIP inclusion only if they expect a twenty-two year tenure. The intermediate after-tax opportunity rates of 9% to 12% indicate net present ratepayer benefits from CWIP inclusion for all periods beyond six to seven years.

TABLE III

Crossover Points (in years) at which Ratepayers Benefit from Alternative CWIP Treatments

Alternative CWIP Treatments	Ratepayer Opportunity Cost of Funds			
	6%[1]	9%[2]	12%[3]	15%[4]
100% vs. 50%	7	8	10	22
100% vs. 0%	6	7	8	12
50% vs. 0%	5	6	7	10

---

[1] If the ratepayer has an after-tax opportunity cost of funds of 6%:

Prefers	0%	CWIP	if will live in the area	0 - 4	years
Prefers	50%	CWIP	if will live in the area	5 - 6	years
Prefers	100%	CWIP	if will live in the area	7 - 30	years

[2] If the ratepayer has an after-tax opportunity cost of funds of 9%:

Prefers	0%	CWIP	if will live in the area	0 - 5	years
Prefers	50%	CWIP	if will live in the area	6 - 7	years
Prefers	100%	CWIP	if will live in the area	8 - 30	years

[3] If the ratepayer has an after-tax opportunity cost of funds of 12%:

Prefers	0%	CWIP	if will live in the area	0 - 6	years
Prefers	50%	CWIP	if will live in the area	7 - 9	years
Prefers	100%	CWIP	if will live in the area	10 - 30	years

[4] If the ratepayer has an after-tax opportunity cost of funds of 15%:

Prefers	0%	CWIP	if will live in the area	0 - 9	years
Prefers	50%	CWIP	if will live in the area	10 - 21	years
Prefers	100%	CWIP	if will live in the area	22 - 30	years

V. CONCLUSION

The preceding analyses have offered an evaluation of the ratepayer impact of alternative regulatory treatments of construction work in progress. Sections II and III defined the construction work in progress issue and discussed arguments for and against inclusion of CWIP in rate base. Section IV described the Commission's CWIP Analysis Model and provided specific evaluations of alternative CWIP scenarios. Ratepayer impacts were presented in terms of present value costs of revenue requirements resulting from various approaches to the CWIP decision. It was shown that depending on the ratepayer's opportunity cost of funds, a crossover point, or point at which the ratepayer is indifferent to alternative CWIP treatments, will exist. This point can be used to determine whether or not a ratepayer will benefit directly from the inclusion of additional CWIP in rate base.

A review of various demographic characteristics of ratepayers in the State may help to put the crossover point concept into perspective. As indicated by the analysis summarized in Table III and as discussed in Section II previously, intergenerational and population migration data are very important in evaluating alternative CWIP policies for the State. It can generally be said that transients and individuals who may be expected to die within a short period will not benefit from inclusion of CWIP in rate base.

The actuarial data in Table IV show life expectancies for various age groups beyond age sixty-five. The table also shows the proportion of the population that can be expected to survive to at least the next age bracket (an additional five

TABLE IV

LIFE EXPECTANCY AT VARIOUS AGES

United States, 1977

Age	Percentage of Persons Who Will Live an Additional Five Years	Average Number of Years of Life Remaining
65	88.3%	16.3
70	82.4	13.1
75	73.5	10.4
80	63.9	8.2

Source: Vital Statistics of the United States, 1977.
Volume II - Section 5
Life Tables

years). For example, about 88% of individuals sixty-five years old are expected to still be living at age seventy. Even at age eighty, almost 64% are expected to survive to age eighty-five or beyond. These data would seem to indicate that intergenerational arguments against CWIP inclusion, based on equity for senior citizens, should not be accepted without careful review.

With respect to typical State migration patterns, the CWIP impact is more difficult to evaluate. Utility company customer data may not be useful unless the data differentiate between customers who move within the state and customers who leave Texas or expire. For example, residential customers in apartments in the larger cities tend to move often, changing utility service location as often as once a year on average. Data on the number of "disconnects" often reflect movement within a utility's service area or within the State. Limited information based on forwarding addresses and 1970 Census data indicate that about 2.5% to 3.5% of annual utility customer losses are due to State out-migration or death.

These demographic statistics, in combination with the financial relationships developed in Section IV, indicate that present regulatory treatment of CWIP provides a net benefit to ratepayers in the State. The data suggest that utility ratepayers receive direct dollar compensation, via lower future utility bills, from relatively short-term investments in the carrying costs of utility construction programs. These investment returns are especially beneficial to ratepayers during periods of unsettled capital market conditions and large utility construction needs. Present PURA provisions regarding CWIP inclusion in rate base and maintenance of utility company financial integrity are thus supported. The analyses indicate that the inclusion of CWIP in rate base is clearly in the best interest of the vast majority of ratepayers in Texas.

FOOTNOTES

1. Eugene F. Brigham, Testimony for the Florida Public Service Commission regarding Tampa Electric Company, Docket 820007-EU, Summer 1982.

2. Table II lists the average interest cost differences across various debt quality ratings that have prevailed over the past ten years. The differences tend to expand during periods of unsettled market conditions.

3. These levels are representative of the relationships among Aa, A, Baa quality ratings during unsettled market conditions shown previously in the Salomon Brothers data depicted in Table II.

4. Fitzpatric and Stitzel, Public Utility Fortnightly, January 29, 1978, discuss the impact of CWIP inclusion on the cost of capital.

5. At the assumed 25% ratepayer income tax rate, these opportunity rates imply that ratepayers must earn 8%, 12%, 16%, or 20% before tax. These rates might correspond to a money market fund savings rate, a long-term Government bond rate, the before-tax rate on a home mortgage loan, or the before-tax cost of a small consumer loan, respectively.

APPENDIX

TEXAS PUBLIC UTILITY COMMISSION

CWIP ANALYSIS MODEL DESCRIPTION

The PUC CWIP Analysis Model used to generate the following tables is based on the Interactive Financial Planning System (IFPS) modeling language. IFPS allows repetitive evaluation of financial relationships so that internally consistent descriptions of long-run phenomena can be produced. In the "what if" mode IFPS allows an assumption to be changed and its effects to be traced through each year of the process being modeled.

For the CWIP Analysis Model a seven year construction budget and various carrying cost and opportunity cost assumptions are evaluated to determine the effect on ratepayers. This effect is measured by the present value revenue requirement (PRES VAL REV REQ) column. The eleven columns produced by each model run are described below:

1. The Annual Construction expenditures are assumed to be made at the beginning of each year.
2. The CWIP Balance at the beginning of each year is found by adding current construction expenditures to last year's CWIP balance and AFUDC accrual.
3. The annual AFUDC accrual is calculated by first taking the difference between the CWIP balance and the rate base. This difference is then multiplied by the AFUDC rate.
4. The initial Plant in Service amount is found by adding together the CWIP balance and the AFUDC accrual for the seventh year. For each successive period, plant in service is found by subtracting depreciation from the previous year's plant in service balance.
5. During the construction period, the Rate Base is found by multiplying the CWIP balance by the percentage of CWIP in the rate base. Over the operating period, the rate base is equal to plant in service.
6. The Return is found by multiplying the rate base by the rate of return. The rate of return is the weighted average of debt and equity costs with an assumed capital structure of 50% debt and 50% equity.
7. Depreciation is calculated on a straight-line basis over the 30-year service life of the plant.
8. Federal Income Taxes are calculated by multiplying the equity portion of return by the corporate tax rate of 46% and then dividing by one minus the corporate tax rate.
9. The Annual Revenue Requirement is the sum of return, depreciation and FIT.
10. The Total Revenue Requirement is a cummulative total of annual revenue requirements.
11. The Present Value of the total Revenue Requirement is the cummulative revenue requirement discounted back to the present at the ratepayer's after-tax cost of funds.

```
ASSUMPTIONS:  CWIP IN RATE BASE= 100%, RATE OF RETURN=13.0%   AFUDC RATE=1 .0%, AFTER-TAX DISCOUNT RATE=13.0%
RESULTS     :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $ _ 0.49
                                                             ========

      ANNUAL      CWIP              PLANT IN      RATE               DEPRE-               ANNUAL      TOTAL    PRES VAL
      CONSTR       BAL     AFUDC     SERVICE      BASE     RETURN    CIATION       FIT    REV REQ    REV REQ    REV REQ
     -------  --------  --------   ---------  --------  ---------  ---------  --------  ---------  ---------  ---------
 1     15.00     15.00         -           -     15.00       1.95          -         -       1.95       1.95       1.73
 2     30.00     45.00         -           -     45.00       5.85          -         -       5.85       7.80       6.31
 3     40.00     85.00         -           -     85.00      11.05          -         -      11.05      18.85      13.97
 4     60.00    145.00         -           -    145.00      18.85          -         -      18.85      37.70      25.53
 5    115.00    260.00         -           -    260.00      33.80          -         -      33.80      71.50      43.07
 6    100.00    360.00         -           -    360.00      46.80          -         -      46.80     118.30      66.35
 7     65.00    425.00         -           -    425.00      55.25          -         -      55.25     173.55      89.04
 1         -         -         -      425.00    425.00      55.25      14.17         -      69.42     242.97     115.95
 2         -         -         -      410.83    410.83      53.41      14.17         -      67.58     310.54     138.44
 3         -         -         -      396.67    396.67      51.57      14.17         -      65.73     376.28     157.81
 4         -         -         -      382.50    382.50      49.73      14.17         -      63.89     440.17     174.46
 5         -         -         -      368.33    368.33      47.88      14.17         -      62.05     502.22     188.70
 6         -         -         -      354.17    354.17      46.04      14.17         -      60.21     562.43     201.07
 7         -         -         -      340.00    340.00      44.20      14.17         -      58.37     620.79     211.67
 8         -         -         -      325.83    325.83      42.36      14.17         -      56.53     677.32     220.45
 9         -         -         -      311.67    311.67      40.52      14.17         -      54.68     732.00     228.39
10         -         -         -      297.50    297.50      38.68      14.17         -      52.84     784.84     235.01
11         -         -         -      283.33    283.33      36.83      14.17         -      51.00     835.84     240.66
12         -         -         -      269.17    269.17      34.99      14.17         -      49.16     885.00     245.48
13         -         -         -      255.00    255.00      33.15      14.17         -      47.32     932.32     249.59
14         -         -         -      240.83    240.83      31.31      14.17         -      45.48     977.79     253.08
15         -         -         -      226.67    226.67      29.47      14.17         -      43.63    1021.43     256.04
16         -         -         -      212.50    212.50      27.63      14.17         -      41.79    1063.22     258.56
17         -         -         -      198.33    198.33      25.78      14.17         -      39.95    1103.17     260.68
18         -         -         -      184.17    184.17      23.94      14.17         -      38.11    1141.28     262.48
19         -         -         -      170.00    170.00      22.10      14.17         -      36.27    1177.54     263.99
20         -         -         -      155.83    155.83      20.26      14.17         -      34.43    1211.97     265.26
21         -         -         -      141.67    141.67      18.42      14.17         -      32.58    1244.55     266.32
22         -         -         -      127.50    127.50      16.58      14.17         -      30.74    1275.29     267.21
23         -         -         -      113.33    113.33      14.73      14.17         -      28.90    1304.19     267.95
24         -         -         -       99.17     99.17      12.89      14.17         -      27.06    1331.25     268.56
25         -         -         -       85.00     85.00      11.05      14.17         -      25.22    1356.47     269.07
26         -         -         -       70.83     70.83       9.21      14.17         -      23.38    1379.84     269.48
27         -         -         -       56.67     56.67       7.37      14.17         -      21.53    1401.38     269.82
28         -         -         -       42.50     42.50       5.53      14.17         -      19.69    1421.07     270.09
29         -         -         -       28.33     28.33       3.68      14.17         -      17.85    1438.92     270.31
30         -         -         -       14.17     14.17       1.84      14.17         -      16.01    1454.93     270.49
```

ASSUMPTIONS: CWIP IN RATE BASE= 0%, RATE OF RETURN=13.0% AFUDC RATE=13.0%, AFTER TAX DISCOUNT RATE=13.0%
RESULT : PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= 270.49

	ANNUAL CONSTR	CWIP BAL	AFUDC	PLANT IN SERVICE	RATE BASE	RETURN	DEPRE-CIATION	FIT	ANNUAL REV REQ	TOTAL REV REQ	PRES VAL REV REQ
1	15.00	15.00	1.95	-	-	-	-	-	-	-	-
2	30.00	46.95	6.10	-	-	-	-	-	-	-	-
3	40.00	93.05	12.10	-	-	-	-	-	-	-	-
4	60.00	165.15	21.47	-	-	-	-	-	-	-	-
5	115.00	301.62	39.21	-	-	-	-	-	-	-	-
6	100.00	440.83	57.31	-	-	-	-	-	-	-	-
7	65.00	563.14	73.21	-	-	-	-	-	-	-	-
1	-	-	-	636.35	636.35	82.73	21.21	-	103.94	103.94	39.10
2	-	-	-	615.14	615.14	79.97	21.21	-	101.18	205.12	72.70
3	-	-	-	593.92	593.92	77.21	21.21	-	98.42	303.54	101.77
4	-	-	-	572.71	572.71	74.45	21.21	-	95.66	399.20	124.71
5	-	-	-	551.50	551.50	71.70	21.21	-	92.91	492.11	148.15
6	-	-	-	530.29	530.29	68.94	21.21	-	90.15	582.26	166.55
7	-	-	-	509.08	509.08	66.18	21.21	-	87.39	669.65	182.34
8	-	-	-	487.87	487.87	63.42	21.21	-	84.63	754.28	195.87
9	-	-	-	466.65	466.65	60.67	21.21	-	81.88	836.16	207.46
10	-	-	-	445.44	445.44	57.91	21.21	-	79.12	915.28	217.36
11	-	-	-	424.23	424.23	55.15	21.21	-	76.36	991.64	225.83
12	-	-	-	403.02	403.02	52.39	21.21	-	73.60	1065.24	233.04
13	-	-	-	381.81	381.81	49.64	21.21	-	70.85	1136.09	239.19
14	-	-	-	360.60	360.60	46.88	21.21	-	68.09	1204.18	244.42
15	-	-	-	339.38	339.38	44.12	21.21	-	65.33	1269.51	248.86
16	-	-	-	318.17	318.17	41.36	21.21	-	62.57	1332.09	252.63
17	-	-	-	296.96	296.96	38.61	21.21	-	59.82	1391.90	255.81
18	-	-	-	275.75	275.75	35.85	21.21	-	57.06	1448.96	258.50
19	-	-	-	254.54	254.54	33.09	21.21	-	54.30	1503.26	260.76
20	-	-	-	233.33	233.33	30.33	21.21	-	51.54	1554.81	262.66
21	-	-	-	212.12	212.12	27.58	21.21	-	48.79	1603.59	264.25
22	-	-	-	190.90	190.90	24.82	21.21	-	46.03	1649.62	265.58
23	-	-	-	169.69	169.69	22.06	21.21	-	43.27	1692.89	266.69
24	-	-	-	148.48	148.48	19.30	21.21	-	40.51	1733.41	267.61
25	-	-	-	127.27	127.27	16.55	21.21	-	37.76	1771.16	268.36
26	-	-	-	106.06	106.06	13.79	21.21	-	35.00	1806.16	268.98
27	-	-	-	84.85	84.85	11.03	21.21	-	32.24	1838.41	269.49
28	-	-	-	63.63	63.63	8.27	21.21	-	29.48	1867.89	269.90
29	-	-	-	42.42	42.42	5.52	21.21	-	26.73	1894.62	270.23
30	-	-	-	21.21	21.21	2.76	21.21	-	23.97	[illegible]	[illegible]

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ASSUMPTIONS:  CUIP IN RATE BASE= 100%, RATE OF RETURN=13.0%   'UDC RATE=13.0%, AFTER-TAX DISCOUNT RATE= 9.0%
RESULTS    :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $  .6.67
                                                            ========

      ANNUAL       CUIP               PLANT IN       RATE                 DEPRE-                 ANNUAL       TOTAL    PRES VAL
      CONSTR        BAL     AFUDC      SERVICE       BASE     RETURN     CIATION        FIT     REV REQ     REV REQ     REV REQ
  ---------- ---------- --------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
 1     15.00      15.00         -          -      15.00       1.95          -        .96       2.91        2.91        2.65
 2     30.00      45.00         -          -      45.00       5.85          -       2.88       8.73       11.63        9.09
 3     40.00      85.00         -          -      85.00      11.05          -       5.43      16.48       28.11       22.36
 4     60.00     145.00         -          -     145.00      18.85          -       9.26      28.11       56.23       41.74
 5    115.00     260.00         -          -     260.00      33.80          -      16.61      50.41      106.64       73.40
 6    100.00     360.00         -          -     360.00      46.80          -      23.00      69.80      176.44      113.34
 7     65.00     425.00         -          -     425.00      55.25          -      27.15      82.40      258.84      156.30
 1         -          -         -     425.00     425.00      55.25      14.17      27.15      96.57      355.41      203.18
 2         -          -         -     410.83     410.83      53.41      14.17      26.25      93.82      449.23      242.80
 3         -          -         -     396.67     396.67      51.57      14.17      25.34      91.08      540.31      278.72
 4         -          -         -     382.50     382.50      49.73      14.17      24.44      88.33      628.64      310.46
 5         -          -         -     368.33     368.33      47.88      14.17      23.53      85.58      714.22      338.40
 6         -          -         -     354.17     354.17      46.04      14.17      22.63      82.84      797.06      363.20
 7         -          -         -     340.00     340.00      44.20      14.17      21.72      80.09      877.15      384.97
 8         -          -         -     325.83     325.83      42.36      14.17      20.82      77.34      954.49      404.13
 9         -          -         -     311.67     311.67      40.52      14.17      19.91      74.60     1029.08      420.97
10         -          -         -     297.50     297.50      38.68      14.17      19.01      71.85     1100.93      435.74
11         -          -         -     283.33     283.33      36.83      14.17      18.10      69.10     1170.03      448.69
12         -          -         -     269.17     269.17      34.99      14.17      17.20      66.36     1236.39      460.02
13         -          -         -     255.00     255.00      33.15      14.17      16.29      63.61     1300.00      469.91
14         -          -         -     240.83     240.83      31.31      14.17      15.39      60.86     1360.86      478.54
15         -          -         -     226.67     226.67      29.47      14.17      14.48      58.11     1418.97      486.05
16         -          -         -     212.50     212.50      27.63      14.17      13.58      55.37     1474.34      492.56
17         -          -         -     198.33     198.33      25.78      14.17      12.67      52.62     1526.96      498.20
18         -          -         -     184.17     184.17      23.94      14.17      11.77      49.87     1576.84      503.08
19         -          -         -     170.00     170.00      22.10      14.17      10.86      47.13     1623.97      507.27
20         -          -         -     155.83     155.83      20.26      14.17       9.96      44.38     1668.35      510.87
21         -          -         -     141.67     141.67      18.42      14.17       9.05      41.63     1709.98      513.95
22         -          -         -     127.50     127.50      16.58      14.17       8.15      38.89     1748.87      516.57
23         -          -         -     113.33     113.33      14.73      14.17       7.24      36.14     1785.01      518.78
24         -          -         -      99.17      99.17      12.89      14.17       6.34      33.39     1818.40      520.65
25         -          -         -      85.00      85.00      11.05      14.17       5.43      30.65     1849.05      522.21
26         -          -         -      70.83      70.83       9.21      14.17       4.53      27.90     1876.95      523.51
27         -          -         -      56.67      56.67       7.37      14.17       3.62      25.15     1902.10      524.57
28         -          -         -      42.50      42.50       5.53      14.17       2.72      22.41     1924.51      525.43
29         -          -         -      28.33      28.33       3.68      14.17       1.81      19.66     1944.17      526.13
30         -          -         -      14.17      14.17       1.84      14.17        .91      16.91     1961.08      526.67
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ASSUMPTIONS:  CWIP IN RATE BASE=  50%, RATE OF RETURN=13.57   FUDC RATE= 1.5%, AFTER-TAX DISCOUNT RATE=10.1%
RESULTS     :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $ [illegible]36.04
                                                            ========

       ANNUAL      CWIP               PLANT IN      RATE               DEPRE-                ANNUAL      TOTAL    PRES VAL
       CONSTR       BAL      AFUDC     SERVICE      BASE     RETURN    CIATION       FIT    REV REQ    REV REQ    REV REQ
    ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------
 1      15.00      15.00       1.01          -       7.50       1.01          -        .50       1.51       1.51       1.37
 2      30.00      46.01       3.11          -      23.01       3.11          -       1.52       4.62       6.13       5.18
 3      40.00      89.12       6.02          -      44.56       6.02          -       2.94       8.96      15.09      11.09
 4      60.00     155.13      10.47          -      77.57      10.47          -       5.12      15.59      30.68      22.49
 5     115.00     280.61      18.94          -     140.30      18.94          -       9.26      28.20      58.89      39.90
 6     100.00     399.55      26.97          -     199.77      26.97          -      13.19      40.16      99.04      62.42
 7      65.00     491.32      33.18          -     245.76      33.18          -      16.22      49.40     148.45      87.57
 1          -          -          -     524.69     524.69      70.83      17.49      34.64     122.96     271.41     144.41
 2          -          -          -     507.20     507.20      68.47      17.49      33.48     119.45     390.86     194.55
 3          -          -          -     489.71     489.71      66.11      17.49      32.33     115.93     506.79     230.75
 4          -          -          -     472.22     472.22      63.75      17.49      31.18     112.42     619.20     277.66
 5          -          -          -     454.73     454.73      61.39      17.49      30.02     108.90     728.10     311.89
 6          -          -          -     437.24     437.24      59.03      17.49      28.87     105.38     833.49     341.97
 7          -          -          -     419.75     419.75      56.67      17.49      27.71     101.87     935.35     368.37
 8          -          -          -     402.26     402.26      54.31      17.49      26.56      98.35    1033.71     391.51
 9          -          -          -     384.77     384.77      51.94      17.49      25.40      94.84    1128.54     411.78
10          -          -          -     367.29     367.29      49.58      17.49      24.25      91.32    1219.86     429.50
11          -          -          -     349.80     349.80      47.22      17.49      23.09      87.81    1307.67     444.98
12          -          -          -     332.31     332.31      44.86      17.49      21.94      84.29    1391.96     458.46
13          -          -          -     314.82     314.82      42.50      17.49      20.78      80.77    1472.73     470.20
14          -          -          -     297.33     297.33      40.14      17.49      19.63      77.26    1549.99     480.40
15          -          -          -     279.84     279.84      37.78      17.49      18.47      73.74    1623.73     489.23
16          -          -          -     262.35     262.35      35.42      17.49      17.32      70.23    1693.96     496.87
17          -          -          -     244.86     244.86      33.06      17.49      16.17      66.71    1760.67     503.46
18          -          -          -     227.37     227.37      30.69      17.49      15.01      63.19    1823.86     509.13
19          -          -          -     209.88     209.88      28.33      17.49      13.86      59.68    1883.54     513.99
20          -          -          -     192.39     192.39      25.97      17.49      12.70      56.16    1939.70     518.15
21          -          -          -     174.90     174.90      23.61      17.49      11.55      52.65    1992.35     521.68
22          -          -          -     157.41     157.41      21.25      17.49      10.39      49.13    2041.48     524.68
23          -          -          -     139.92     139.92      18.89      17.49       9.24      45.62    2087.10     527.21
24          -          -          -     122.43     122.43      16.53      17.49       8.08      42.10    2129.20     529.33
25          -          -          -     104.94     104.94      14.17      17.49       6.93      38.58    2167.78     531.09
26          -          -          -      87.45      87.45      11.81      17.49       5.77      35.07    2202.85     532.54
27          -          -          -      69.96      69.96       9.44      17.49       4.62      31.55    2234.41     533.73
28          -          -          -      52.47      52.47       7.08      17.49       3.46      28.04    2262.44     534.69
29          -          -          -      34.98      34.98       4.72      17.49       2.31      24.52    2286.96     535.45
30          -          -          -      17.49      17.49       2.36      17.49       1.15      21.01  [illegible] [illegible]
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ASSUMPTIONS:  CWIP IN RATE BASE=   0%, RATE OF RETURN=14 [illegible], AFUDC RATE=14.5%, AFTER-TAX DISCOUNT RATE=10.9%
RESULT     :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT     547.60
                                                             ========

      ANNUAL      CWIP                PLANT IN      RATE                 DEPRE-                  ANNUAL      TOTAL    PRES VAL
      CONSTR       BAL       AFUDC     SERVICE      BASE     RETURN     CIATION        FIT      REV REQ    REV REQ    REV REQ
    ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------
 1      15.00      15.00       2.10          -          -          -          -          -          -
 2      30.00      47.10       6.84          -          -          -          -          -          -
 3      40.00      94.02      13.63          -          -          -          -          -          -
 4      80.00     187.65      24.31          -          -          -          -          -          -
 5     115.00     306.96      44.51          -          -          -          -          -          -
 6     100.00     451.47      65.46          -          -          -          -          -          -
 7      65.00     581.93      84.38          -          -          -          -          -          -
 1          -          -          -     666.31     666.31      96.61      22.21      46.83     165.65     165.65      72.5
 2          -          -          -     644.10     644.10      93.39      22.21      45.27     160.87     326.52     136.9
 3          -          -          -     621.89     621.89      90.17      22.21      43.70     156.09     482.61     191.6
 4          -          -          -     599.68     599.68      86.95      22.21      42.14     151.31     633.92     240.2
 5          -          -          -     577.47     577.47      83.73      22.21      40.58     146.53     780.44     282.71
 6          -          -          -     555.26     555.26      80.51      22.21      39.02     141.74     922.19     319.7
 7          -          -          -     533.05     533.05      77.29      22.21      37.46     136.96    1059.15     352.0
 8          -          -          -     510.84     510.84      74.07      22.21      35.90     132.18    1191.33     380.1
 9          -          -          -     488.63     488.63      70.85      22.21      34.34     127.40    1318.73     404.5
10          -          -          -     466.42     466.42      67.63      22.21      32.78     122.62    1441.35     425.
11          -          -          -     444.20     444.20      64.41      22.21      31.22     117.84    1559.19     444.14
12          -          -          -     421.99     421.99      61.19      22.21      29.66     113.06    1672.25     460.04
13          -          -          -     399.78     399.78      57.97      22.21      28.10     108.27    1780.52     473.2
14          -          -          -     377.57     377.57      54.75      22.21      26.54     103.49    1884.01     485.6
15          -          -          -     355.36     355.36      51.53      22.21      24.97      98.71    1982.73     495.0
16          -          -          -     333.15     333.15      48.31      22.21      23.41      93.93    2076.66     504.5
17          -          -          -     310.94     310.94      45.09      22.21      21.85      89.15    2165.81     512.0
18          -          -          -     288.73     288.73      41.87      22.21      20.29      84.37    2250.17     518.4
19          -          -          -     266.52     266.52      38.65      22.21      18.73      79.59    2329.76     523.8
20          -          -          -     244.31     244.31      35.43      22.21      17.17      74.81    2404.57     528.4
21          -          -          -     222.10     222.10      32.20      22.21      15.61      70.02    2474.59     532.1
22          -          -          -     199.89     199.89      28.98      22.21      14.05      65.24    2539.83     535.6
23          -          -          -     177.68     177.68      25.76      22.21      12.49      60.46    2600.29     538.3
24          -          -          -     155.47     155.47      22.54      22.21      10.93      55.68    2655.97     540.6
25          -          -          -     133.26     133.26      19.32      22.21       9.37      50.90    2706.87     542.4
26          -          -          -     111.05     111.05      16.10      22.21       7.80      46.12    2752.99     544.0
27          -          -          -      88.84      88.84      12.88      22.21       6.24      41.34    2794.33     545.2
28          -          -          -      66.63      66.63       9.66      22.21       4.68      36.55    2830.88     546.2
29          -          -          -      44.42      44.42       6.44      22.21       3.12      31.77    2862.65     547.01
30          -          -          -      22.21      22.21       3.22      22.21       1.56      26.99    2889.64     547.60
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ASSUMPTIONS:  CWIP IN RATE BASE= 100%, RATE OF RETURN=13   , AFUDC RATE=13.0%, AFTER-TAX DISCOUNT RATE= 6.0%
RESULT     :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $ 812.20
                                                          ========

        ANNUAL      CWIP              PLANT IN      RATE              DEPRE-               ANNUAL      TOTAL    PRES VAL
        CONSTR       BAL     AFUDC    SERVICE       BASE    RETURN   CIATION        FIT    REV REQ    REV REQ    REV REQ
     --------- --------- --------- --------- --------- --------- --------- --------- --------- --------- ---------
  1      15.00     15.00         -         -     15.00      1.95         -       .96      2.91      2.91      2.74
  2      30.00     45.00         -         -     45.00      5.85         -      2.88      8.73     11.63     10.51
  3      40.00     85.00         -         -     85.00     11.05         -      5.43     16.48     28.11     24.35
  4      60.00    145.00         -         -    145.00     18.85         -      9.26     28.11     56.21     46.62
  5     115.00    260.00         -         -    260.00     33.80         -     16.61     50.41    106.64     84.29
  6     100.00    360.00         -         -    360.00     46.80         -     23.00     69.80    176.44    131.47
  7      65.00    425.00         -         -    425.00     55.25         -     27.15     82.40    258.84    188.29
  1          -         -         -    425.00    425.00     55.25     14.17     27.15     96.57    355.41    248.88
  2          -         -         -    410.83    410.83     53.41     14.17     26.25     93.83    449.23    304.42
  3          -         -         -    396.67    396.67     51.57     14.17     25.34     91.08    540.31    355.29
  4          -         -         -    382.50    382.50     49.73     14.17     24.44     88.33    628.64    401.80
  5          -         -         -    368.33    368.33     47.88     14.17     23.53     85.58    714.22    444.34
  6          -         -         -    354.17    354.17     46.04     14.17     22.63     82.84    797.06    483.17
  7          -         -         -    340.00    340.00     44.20     14.17     21.72     80.09    877.15    518.60
  8          -         -         -    325.83    325.83     42.36     14.17     20.82     77.34    954.49    550.87
  9          -         -         -    311.67    311.67     40.52     14.17     19.91     74.60   1029.08    580.21
 10          -         -         -    297.50    297.50     38.68     14.17     19.01     71.85   1100.93    606.91
 11          -         -         -    283.33    283.33     36.83     14.17     18.10     69.10   1170.03    631.12
 12          -         -         -    269.17    269.17     34.99     14.17     17.20     66.36   1236.39    653.05
 13          -         -         -    255.00    255.00     33.15     14.17     16.29     63.61   1300.00    672.09
 14          -         -         -    240.83    240.83     31.31     14.17     15.39     60.86   1360.86    690.79
 15          -         -         -    226.67    226.67     29.47     14.17     14.48     58.11   1418.97    706.92
 16          -         -         -    212.50    212.50     27.63     14.17     13.58     55.37   1474.34    721.41
 17          -         -         -    198.33    198.33     25.78     14.17     12.67     52.62   1526.96    734.41
 18          -         -         -    184.17    184.17     23.94     14.17     11.77     49.87   1576.84    746.03
 19          -         -         -    170.00    170.00     22.10     14.17     10.86     47.13   1623.97    756.39
 20          -         -         -    155.83    155.83     20.26     14.17      9.96     44.38   1668.35    765.59
 21          -         -         -    141.67    141.67     18.42     14.17      9.05     41.63   1709.98    773.74
 22          -         -         -    127.50    127.50     16.58     14.17      8.15     38.89   1748.87    780.91
 23          -         -         -    113.33    113.33     14.73     14.17      7.24     36.14   1785.01    787.21
 24          -         -         -     99.17     99.17     12.89     14.17      6.34     33.39   1818.40    792.69
 25          -         -         -     85.00     85.00     11.05     14.17      5.43     30.65   1849.05    797.44
 26          -         -         -     70.83     70.83      9.21     14.17      4.53     27.90   1876.95    801.52
 27          -         -         -     56.67     56.67      7.37     14.17      3.62     25.15   1902.10    804.99
 28          -         -         -     42.50     42.50      5.53     14.17      2.72     22.41   1924.51    807.90
 29          -         -         -     28.33     28.33      3.68     14.17      1.81     19.66   1944.17    810.32
 30          -         -         -     14.17     14.17      1.84     14.17       .91 [illegible] [illegible] [illegible]
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ASSUMPTIONS: CWIP IN RATE BASE= 50%, RATE OF RETURN=13. AFUDC RATE=13.5%, AFTER-TAX DISCOUNT RATE= 6.0%
RESULT : PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $ 900.44

	ANNUAL CONSTR	CWIP BAL	AFUDC	PLANT IN SERVICE	RATE BASE	RETURN	DEPRE-CIATION	FIT	ANNUAL REV REQ	TOTAL REV REQ	PRES VAL REV REQ
1	15.00	15.00	1.01	-	7.50	1.01	-	.50	1.51	1.51	1.42
2	30.00	46.01	3.11	-	23.01	3.11	-	1.52	4.62	6.13	5.54
3	40.00	89.12	6.02	-	44.56	6.02	-	2.94	8.96	15.09	13.06
4	60.00	155.13	10.47	-	77.57	10.47	-	5.12	15.59	30.68	25.41
5	115.00	280.61	18.94	-	140.30	18.94	-	9.26	28.20	58.89	46.48
6	100.00	399.55	26.97	-	199.77	26.97	-	13.19	40.16	99.04	74.79
7	65.00	491.52	33.18	-	245.76	33.18	-	16.22	49.40	148.45	107.65
1	-	-	-	524.69	524.69	70.83	17.49	34.64	122.96	271.41	184.80
2	-	-	-	507.20	507.20	68.47	17.49	33.48	119.45	390.86	255.50
3	-	-	-	489.71	489.71	66.11	17.49	32.33	115.93	506.79	320.23
4	-	-	-	472.22	472.22	63.75	17.49	31.18	112.42	619.20	379.45
5	-	-	-	454.73	454.73	61.39	17.49	30.02	108.90	728.10	433.57
6	-	-	-	437.24	437.24	59.03	17.49	28.87	105.38	833.49	482.96
7	-	-	-	419.75	419.75	56.67	17.49	27.71	101.87	935.35	528.04
8	-	-	-	402.26	402.26	54.31	17.49	26.56	98.35	1033.71	569.08
9	-	-	-	384.77	384.77	51.94	17.49	25.40	94.84	1128.54	606.41
10	-	-	-	367.29	367.29	49.58	17.49	24.25	91.32	1219.86	640.32
11	-	-	-	349.80	349.80	47.22	17.49	23.09	87.81	1307.67	671.08
12	-	-	-	332.31	332.31	44.86	17.49	21.94	84.29	1391.96	698.94
13	-	-	-	314.82	314.82	42.50	17.49	20.78	80.77	1472.73	724.13
14	-	-	-	297.33	297.33	40.14	17.49	19.63	77.26	1549.99	746.85
15	-	-	-	279.84	279.84	37.78	17.49	18.47	73.74	1623.73	767.32
16	-	-	-	262.35	262.35	35.42	17.49	17.32	70.23	1693.96	785.70
17	-	-	-	244.86	244.86	33.06	17.49	16.17	66.71	1760.67	802.18
18	-	-	-	227.37	227.37	30.69	17.49	15.01	63.19	1823.86	816.90
19	-	-	-	209.88	209.88	28.33	17.49	13.86	59.68	1883.54	830.02
20	-	-	-	192.39	192.39	25.97	17.49	12.70	56.16	1939.70	841.67
21	-	-	-	174.90	174.90	23.61	17.49	11.55	52.65	1992.35	851.97
22	-	-	-	157.41	157.41	21.25	17.49	10.39	49.13	2041.48	861.03
23	-	-	-	139.92	139.92	18.89	17.49	9.24	45.62	2087.10	868.98
24	-	-	-	122.43	122.43	16.53	17.49	8.08	42.10	2129.20	875.89
25	-	-	-	104.94	104.94	14.17	17.49	6.93	38.58	2167.78	881.87
26	-	-	-	87.45	87.45	11.81	17.49	5.77	35.07	2202.85	887.00
27	-	-	-	69.96	69.96	9.44	17.49	4.62	31.55	2234.41	891.35
28	-	-	-	52.47	52.47	7.08	17.49	3.46	28.04	2262.44	895.00
29	-	-	-	34.98	34.98	4.72	17.49	2.31	24.52	2286.96	898.01
30	-	-	-	17.49	17.49	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

ASSUMPTIONS: CWIP IN RATE BASE= 0%, RATE OF RETURN=14.5 AFUDC RATE=14.5%, AFTER-TAX DISCOUNT RATE= 6.0%
RESULT : PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $1063.75
========

	ANNUAL CONSTR	CWIP BAL	AFUDC	PLANT IN SERVICE	RATE BASE	RETURN	DEPRE-CIATION	FIT	ANNUAL REV REQ	TOTAL REV REQ	PRES VAL REV REQ
1	15.00	15.00	2.18	-	-	-	-	-	-	-	
2	30.00	47.18	6.04	-	-	-	-	-	-	-	
3	40.00	94.02	13.63	-	-	-	-	-	-	-	
4	60.00	167.65	24.31	-	-	-	-	-	-	-	
5	115.00	306.96	44.51	-	-	-	-	-	-		
6	100.00	451.47	65.44	-	-	-	-	-	-		
7	65.00	581.93	84.30	-	-	-	-	-	-		
1	-	-	-	666.31	666.31	96.61	22.21	46.03	165.65	165.65	103.93
2	-	-	-	644.10	644.10	93.39	22.21	45.27	160.87	326.52	199.15
3	-	-	-	621.89	621.89	90.17	22.21	43.70	156.09	482.61	286.31
4	-	-	-	599.68	599.68	86.95	22.21	42.14	151.31	633.92	366.03
5	-	-	-	577.47	577.47	83.73	22.21	40.58	146.53	780.44	438.84
6	-	-	-	555.26	555.26	80.51	22.21	39.02	141.74	922.19	505.29
7	-	-	-	533.05	533.05	77.29	22.21	37.46	136.96	1059.15	565.86
8	-	-	-	510.84	510.84	74.07	22.21	35.90	132.18	1191.33	621.01
9	-	-	-	488.63	488.63	70.85	22.21	34.34	127.40	1318.73	671.16
10	-	-	-	466.42	466.42	67.63	22.21	32.78	122.62	1441.35	716.71
11	-	-	-	444.20	444.20	64.41	22.21	31.22	117.84	1559.19	757.99
12	-	-	-	421.99	421.99	61.19	22.21	29.66	113.06	1672.25	795.36
13	-	-	-	399.78	399.78	57.97	22.21	28.10	108.27	1780.52	829.12
14	-	-	-	377.57	377.57	54.75	22.21	26.54	103.49	1884.01	859.57
15	-	-	-	355.36	355.36	51.53	22.21	24.97	98.71	1982.73	886.96
16	-	-	-	333.15	333.15	48.31	22.21	23.41	93.93	2076.66	911.55
17	-	-	-	310.94	310.94	45.09	22.21	21.85	89.15	2165.81	933.57
18	-	-	-	288.73	288.73	41.87	22.21	20.29	84.37	2250.17	953.23
19	-	-	-	266.52	266.52	38.65	22.21	18.73	79.59	2329.76	970.72
20	-	-	-	244.31	244.31	35.43	22.21	17.17	74.81	2404.57	986.23
21	-	-	-	222.10	222.10	32.20	22.21	15.61	70.02	2474.59	999.93
22	-	-	-	199.89	199.89	28.98	22.21	14.05	65.24	2539.83	1011.97
23	-	-	-	177.68	177.68	25.76	22.21	12.49	60.46	2600.29	1022.50
24	-	-	-	155.47	155.47	22.54	22.21	10.93	55.68	2655.97	1031.64
25	-	-	-	133.26	133.26	19.32	22.21	9.37	50.90	2706.87	1039.53
26	-	-	-	111.05	111.05	16.10	22.21	7.80	46.12	2752.99	1046.27
27	-	-	-	88.84	88.84	12.88	22.21	6.24	41.34	2794.33	1051.97
28	-	-	-	66.63	66.63	9.66	22.21	4.68	36.55	2830.88	1056.73
29	-	-	-	44.42	44.42	6.44	22.21	3.12	31.77	2862.65	1060.63
30	-	-	-	22.21	22.21	3.22	22.21	1.56	26.99	2889.64	[illegible]

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ASSUMPTIONS:  CWIP IN RATE BASE= 100%, RATE OF RETURN=1[illegible]%, AFUDC RATE=13.0%, AFTER-TAX DISCOUNT RATE= 9.
RES         :  PRESENT VALUE OF TOTAL REVENUE REQUIREMEN   $ 571.07
                                                         ========

        ANNUAL      CWIP                PLANT IN      RATE                DEPRE-                 ANNUAL      TOTAL    PRES VA
        CONSTR       BAL       AFUDC     SERVICE      BASE     RETURN    CIATION         FIT    REV REQ    REV REQ    REV RQ
     ---------  --------   ---------  ----------  --------  ---------  ---------  ---------  ---------  ---------  --------
  1      15.00     15.00           -           -     15.00       1.95          -         .96       2.91       2.91      2.6
  2      30.00     45.00           -           -     45.00       5.85          -        2.88       8.73      11.63      10.[illegible]
  3      40.00     85.00           -           -     85.00      11.05          -        5.43      16.48      28.11      22.[illegible]
  4      60.00    145.00           -           -    145.00      18.85          -        9.26      28.11      56.23      42.6
  5     115.00    260.00           -           -    260.00      33.80          -       16.61      50.41     106.64      75.1
  6     100.00    360.00           -           -    360.00      46.80          -       23.00      69.80     176.44     117.0
  7      65.00    425.00           -           -    425.00      55.25          -       27.15      82.40     258.84     182.1
  1          -         -           -      425.00    425.00      55.25      14.17       27.15      96.57     355.41     210.5
  2          -         -           -      410.83    410.83      53.41      14.17       26.25      93.83     449.23     251.7
  3          -         -           -      396.67    396.67      51.57      14.17       25.34      91.08     540.31     292.2
  4          -         -           -      382.50    382.50      49.73      14.17       24.44      88.33     628.64     326.4
  5          -         -           -      368.33    368.33      47.88      14.17       23.53      85.58     714.22     356.9
  6          -         -           -      354.17    354.17      46.04      14.17       22.63      82.84     797.06     383.9
  7          -         -           -      340.00    340.00      44.20      14.17       21.72      80.09     877.15     407.8
  8          -         -           -      325.83    325.83      42.36      14.17       20.82      77.34     954.49     429.1
  9          -         -           -      311.67    311.67      40.52      14.17       19.91      74.60    1029.09     447.9
 10          -         -           -      297.50    297.50      38.68      14.17       19.01      71.85    1100.93     464.5
 11          -         -           -      283.33    283.33      36.83      14.17       18.10      69.10    1170.03     479.1
 12          -         -           -      269.17    269.17      34.99      14.17       17.20      66.36    1236.39     492.0
 13          -         -           -      255.00    255.00      33.15      14.17       16.29      63.61    1300.00     503.4
 14          -         -           -      240.83    240.83      31.31      14.17       15.39      60.86    1360.86     513.3
 15          -         -           -      226.67    226.67      29.47      14.17       14.48      58.11    1418.97     522.1
 16          -         -           -      212.50    212.50      27.63      14.17       13.58      55.37    1474.34     529.7
 17          -         -           -      198.33    198.33      25.78      14.17       12.67      52.62    1526.96     536.3
 18          -         -           -      184.17    184.17      23.94      14.17       11.77      49.87    1576.84     542.1
 19          -         -           -      170.00    170.00      22.10      14.17       10.86      47.13    1623.97     547.1
 20          -         -           -      155.83    155.83      20.26      14.17        9.96      44.38    1668.35     551.5
 21          -         -           -      141.67    141.67      18.42      14.17        9.05      41.63    1709.98     555.2
 22          -         -           -      127.50    127.50      16.58      14.17        8.15      38.89    1748.87     558.4
 23          -         -           -      113.33    113.33      14.73      14.17        7.24      36.14    1785.01     561.1
 24          -         -           -       99.17     99.17      12.89      14.17        6.34      33.39    1818.40     563.4
 25          -         -           -       85.00     85.00      11.05      14.17        5.43      30.65    1849.05     565.4
 26          -         -           -       70.83     70.83       9.21      14.17        4.53      27.90    1876.95     567.0
 27          -         -           -       56.67     56.67       7.37      14.17        3.62      25.15    1902.10     568.3
 28          -         -           -       42.50     42.50       5.53      14.17        2.72      22.41    1924.51     569.4
 29          -         -           -       28.33     28.33       3.68      14.17        1.81      19.65    1944.17     570.3
 30          -         -           -       14.17     14.17       1.84      14.17         .91      16.91    1961.08     571.0
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ASSUMPTIONS:  CWIP IN RATE BASE=  50%, RATE OF RETURN=13.2   AFUDC RATE=13.5%, AFTER-TAX DISCOUNT RATE= 9.0%
RESULT     :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $ 612.37
                                                          ========

         ANNUAL      CWIP              PLANT IN     RATE              DEPRE-                ANNUAL      TOTAL    PRES VAL
         CONSTR       BAL     AFUDC    SERVICE      BASE    RETURN   CIATION        FIT    REV REQ    REV REQ    REV REQ
        -------   -------  --------  ---------  --------  --------  --------  ---------  ---------  ---------  ---------
 1        15.00     15.00      1.01          -      7.50      1.01         -        .50       1.51       1.51       1.38
 2        30.00     45.01      3.11          -     23.01      3.11         -       1.52       4.63       6.13       5.28
 3        40.00     89.12      6.02          -     44.56      6.02         -       2.94       8.96      15.09      12.19
 4        60.00    155.13     10.47          -     77.57     10.47         -       5.12      15.59      30.68      23.24
 5       115.00    280.61     18.94          -    140.30     18.94         -       9.26      28.20      58.88      41.52
 6       100.00    399.55     26.97          -    199.77     26.97         -      13.19      40.16      99.04      65.51
 7        65.00    491.52     33.18          -    245.76     33.18         -      16.22      49.40     148.45      92.54
 1            -         -         -     524.69    524.69     70.83     17.49      34.64     122.96     271.41     154.25
 2            -         -         -     507.20    507.20     68.47     17.49      33.40     119.45     390.86     209.25
 3            -         -         -     489.71    489.71     66.11     17.49      32.33     115.93     506.79     258.22
 4            -         -         -     472.22    472.22     63.75     17.49      31.18     112.42     619.20     301.70
 5            -         -         -     454.73    454.73     61.39     17.49      30.02     108.90     728.10     340.50
 6            -         -         -     437.24    437.24     59.03     17.49      28.87     105.38     833.49     374.87
 7            -         -         -     419.75    419.75     56.67     17.49      27.71     101.87     935.35     405.36
 8            -         -         -     402.26    402.26     54.31     17.49      26.56      98.35    1033.71     432.36
 9            -         -         -     384.77    384.77     51.94     17.49      25.40      94.84    1128.54     456.24
10            -         -         -     367.29    367.29     49.58     17.49      24.25      91.32    1219.86     477.35
11            -         -         -     349.80    349.80     47.22     17.49      23.09      87.81    1307.67     495.76
12            -         -         -     332.31    332.31     44.86     17.49      21.94      84.29    1391.96     512.35
13            -         -         -     314.82    314.82     42.50     17.49      20.78      80.77    1472.73     526.77
14            -         -         -     297.33    297.33     40.14     17.49      19.63      77.26    1549.99     539.41
15            -         -         -     279.84    279.84     37.78     17.49      18.47      73.74    1623.73     550.49
16            -         -         -     262.35    262.35     35.42     17.49      17.32      70.23    1693.96     560.16
17            -         -         -     244.86    244.86     33.06     17.49      16.17      66.71    1760.67     568.69
18            -         -         -     227.37    227.37     30.69     17.49      15.01      63.19    1823.86     575.92
19            -         -         -     209.88    209.88     28.33     17.49      13.86      59.68    1883.54     582.27
20            -         -         -     192.39    192.39     25.97     17.49      12.70      56.16    1939.70     587.76
21            -         -         -     174.90    174.90     23.61     17.49      11.55      52.65    1992.35     592.47
22            -         -         -     157.41    157.41     21.25     17.49      10.39      49.13    2041.48     596.51
23            -         -         -     139.92    139.92     18.89     17.49       9.24      45.62    2087.10     599.94
24            -         -         -     122.43    122.43     16.53     17.49       8.08      42.10    2129.20     602.86
25            -         -         -     104.94    104.94     14.17     17.49       6.93      38.58    2167.78     605.30
26            -         -         -      87.45     87.45     11.81     17.49       5.77      35.07    2202.85     607.34
27            -         -         -      69.96     69.96      9.44     17.49       4.62      31.55    2234.40     609.03
28            -         -         -      52.47     52.47      7.08     17.49       3.46      28.04    2262.44     610.40
29            -         -         -      34.98     34.98      4.72     17.49       2.31      24.52    2286.96     611.51
30            -         -         -      17.49     17.49      2.36     17.49       1.15      21.01    2307.97     612.37
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ASSUMPTIONS:  CWIP IN RATE BASE=   0%, RATE OF RETURN=14.5%  AFUDC RAT =14.5%, AFTER-TAX DISCOUNT RATE= 9.0%
RESULT      :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT=   698.11
                                                          ========

        ANNUAL      CWIP                PLANT IN      RATE                DEPRE-                ANNUAL     TOTAL    PREG VAL
        CONSTR       BAL      AFUDC      SERVICE      BASE     RETURN    CIATION       FIT     REV REQ   REV REQ    REV REQ
      --------  --------  ---------  ---------  --------  ---------  ---------  --------  --------  --------  --------
  1      15.00     15.00       2.18          -         -          -          -         -         -
  2      30.00     47.18       6.84          -         -          -          -         -         -
  3      40.00     94.02      13.63          -         -          -          -         -         -
  4      60.00    167.65      24.31                    -          -          -         -         -
  5     115.00    306.95      44.51          -         -          -          -         -         -
  6     100.00    451.47      65.46          -         -          -          -         -         -
  7      65.00    581.93      84.38          -         -          -          -         -         -
  1                   -          -      666.31    666.31      96.61      22.21     46.83    165.65    165.65     83.1
  2                   -          -      644.10    644.10      93.39      22.21     45.27    160.87    326.52    157.2
  3          -        -          -      621.89    621.89      90.17      22.21     43.70    156.09    482.61    223.1
  4          -        -          -      599.68    599.68      86.95      22.21     42.14    151.31    633.92    281.7
  5          -        -          -      577.47    577.47      83.73      22.21     40.58    146.53    780.44    333.8
  6          -        -          -      555.26    555.26      80.51      22.21     39.02    141.74    922.19    380.1
  7          -        -          -      533.05    533.05      77.29      22.21     37.46    136.96   1059.15    421.0
  8          -        -          -      510.84    510.84      74.07      22.21     35.90    132.18   1191.33    457.3
  9          -        -          -      488.63    488.63      70.85      22.21     34.34    127.40   1318.73    489.4
 10          -        -          -      466.42    466.42      67.63      22.21     32.78    122.62   1441.35    517.0
 11          -        -          -      444.20    444.20      64.41      22.21     31.22    117.84   1559.19    542.7
 12          -        -          -      421.99    421.99      61.19      22.21     29.66    113.06   1672.25    564.2
 13          -        -          -      399.78    399.78      57.97      22.21     28.10    108.27   1780.52    584.09
 14          -        -          -      377.57    377.57      54.75      22.21     26.54    103.49   1884.01    601.0
 15          -        -          -      355.36    355.36      51.53      22.21     24.97     98.71   1982.73    615.8
 16          -        -          -      333.15    333.15      48.31      22.21     23.41     93.93   2076.66    628.00
 17          -        -          -      310.94    310.94      45.09      22.21     21.85     89.15   2165.81    640.0
 18          -        -          -      288.73    288.73      41.87      22.21     20.29     84.37   2250.17    649.8
 19          -        -          -      266.52    266.52      38.65      22.21     18.73     79.59   2329.76    658.3
 20          -        -          -      244.31    244.31      35.43      22.21     17.17     74.81   2404.57    665.6
 21          -        -          -      222.10    222.10      32.20      22.21     15.61     70.02   2474.59    671.0
 22          -        -          -      199.89    199.89      28.98      22.21     14.05     65.24   2539.83    677.2
 23          -        -          -      177.68    177.68      25.76      22.21     12.49     60.46   2600.29    681.01
 24          -        -          -      155.47    155.47      22.54      22.21     10.93     55.68   2655.97    685.6
 25          -        -          -      133.26    133.26      19.32      22.21      9.37     50.90   2706.87    688.0
 26          -        -          -      111.05    111.05      16.10      22.21      7.80     46.12   2752.99    691.5
 27          -        -          -       88.84     88.84      12.88      22.21      6.24     41.34   2794.33    693.7
 28          -        -          -       66.63     66.63       9.66      22.21      4.68     36.55   2830.88    695.3
 29          -                   -       44.42     44.42       6.44      22.21      3.12     31.77   2862.65    697.06
 30          -                   -       22.21     22.21       3.22      22.21      1.56     26.99   2889.64    698.1
```

```
ASSUMPTIONS:  CWIP IN RATE BASE= 100%, RATE OF RETURN=13 %, AFUDC RATE=13.0%, AFTER TAX DISCOUNT RATE=12.6
RESULT      :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT  = 419.23
                                                             ========

        ANNUAL      CWIP               PLANT IN      RATE                  DEPRE-                ANNUAL       TOTAL    PRES VA
        CONSTR       BAL     AFUDC      SERVICE      BASE     RETURN     CIATION        FIT     REV REQ     REV REQ     REV R
                ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  -------
   1     15.00     15.00         -          -      15.00       1.95          -        .96       2.91        2.91      2.6
   2     30.00     45.00         -          -      45.00       5.85          -       2.88       8.73       11.63      9.5
   3     40.00     85.00         -          -      85.00      11.05          -       5.43      16.48       28.11     21.2
   4     60.00    145.00         -          -     145.00      18.85          -       9.26      28.11       56.23     39.1
   5    115.00    260.00         -          -     260.00      33.80          -      16.61      50.41      106.64     67.3
   6    100.00    360.00         -          -     360.00      46.80          -      23.00      69.80      176.44    101.1
   7     65.00    425.00         -          -     425.00      55.25          -      27.15      82.40      258.84    140.3
   1         -         -         -     425.00     425.00      55.25      14.17      27.15      96.57      355.41    179.3
   2         -         -         -     410.83     410.83      53.41      14.17      26.25      93.82      449.23    213.2
   3         -         -         -     396.67     396.67      51.57      14.17      25.34      91.08      540.31    242.5
   4         -         -         -     382.50     382.50      49.73      14.17      24.44      88.33      628.64    267.9
   5         -         -         -     368.33     368.33      47.88      14.17      23.53      85.58      714.22    289.9
   6         -         -         -     354.17     354.17      46.04      14.17      22.63      82.84      797.06    308.9
   7         -         -         -     340.00     340.00      44.20      14.17      21.72      80.09      877.15    325.2
   8         -         -         -     325.83     325.83      42.36      14.17      20.82      77.34      954.49    339.4
   9         -         -         -     311.67     311.67      40.52      14.17      19.91      74.60     1029.09    351.5
  10         -         -         -     297.50     297.50      38.68      14.17      19.01      71.85     1100.93    362.0
  11         -         -         -     283.33     283.33      36.83      14.17      18.10      69.10     1170.03    371.0
  12         -         -         -     269.17     269.17      34.99      14.17      17.20      66.36     1236.39    378.7
  13         -         -         -     255.00     255.00      33.15      14.17      16.29      63.61     1300.00    385.1
  14         -         -         -     240.83     240.83      31.31      14.17      15.39      60.86     1360.86    390.9
  15         -         -         -     226.67     226.67      29.47      14.17      14.48      58.11     1418.97    395.7
  16         -         -         -     212.50     212.50      27.63      14.17      13.58      55.37     1474.34    399.0
  17         -         -         -     198.33     198.33      25.78      14.17      12.67      52.62     1526.96    403.3
  18         -         -         -     184.17     184.17      23.94      14.17      11.77      49.87     1576.84    406.2
  19         -         -         -     170.00     170.00      22.10      14.17      10.86      47.13     1623.97    408.7
  20         -         -         -     155.83     155.83      20.26      14.17       9.96      44.38     1668.35    410.01
  21         -         -         -     141.67     141.67      18.42      14.17       9.05      41.63     1709.98    412.5
  22         -         -         -     127.50     127.50      16.58      14.17       8.15      38.89     1748.87    414.01
  23         -         -         -     113.33     113.33      14.73      14.17       7.24      36.14     1785.01    415.21
  24         -         -         -      99.17      99.17      12.89      14.17       6.34      33.39     1818.40    416.21
  25         -         -         -      85.00      85.00      11.05      14.17       5.43      30.65     1849.05    417.02
  26         -         -         -      70.83      70.83       9.21      14.17       4.53      27.90     1876.95    417.69
  27         -         -         -      56.67      56.67       7.37      14.17       3.62      25.15     1902.10    418.22
  28         -         -         -      42.50      42.50       5.53      14.17       2.72      22.41     1924.51    418.64
  29         -         -         -      28.33      28.33       3.68      14.17       1.81      19.66     1944.17    418.90
  30         -         -         -      14.17      14.17       1.84      14.17        .91      16.91     1961.08    [illegible]
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ASSUM' 'ONS:  CUIP IN RATE BASE=  30%, RATE OF RETURN=13     AFUDC RAT! =13.5%, AFTER-TAX DISCOUNT RATE=12.0%
RESUL      :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $ 434.50
                                                          ========

      ANNUAL      CUIP               PLANT IN      RATE                DEPRE-                ANNUAL      TOTAL   PRES VAL
      CONSTR       BAL      AFUDC     SERVICE      BASE     RETURN    CIATION        FIT    REV REQ    REV REQ    REV REQ
   ---------  --------- ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------
 1     15.00      15.00      1.01          -       7.50       1.01          -        .50       1.51       1.51       1.35
 2     30.00      46.01      3.11          -      23.01       3.11          -       1.52       4.62       6.13       5.03
 3     40.00      89.12      6.02          -      44.56       6.02          -       2.94       8.96      15.09      11.41
 4     60.00     155.13     10.47          -      77.57      10.47          -       5.12      15.59      30.68      21.32
 5    115.00     280.61     18.94          -     140.30      18.94          -       9.26      28.20      58.89      37.32
 6    100.00     399.55     26.97          -     199.77      26.97          -      13.19      40.16      99.04      57.67
 7     65.00     491.52     33.18          -     245.76      33.18          -      16.22      49.40     148.45      80.01
 1         -          -         -     524.69     524.69      70.83      17.49      34.64     122.96     271.41     129.60
 2         -          -         -     507.20     507.20      68.47      17.49      33.48     119.45     390.86     172.75
 3         -          -         -     489.71     489.71      66.11      17.49      32.33     115.93     506.79     210.08
 4         -          -         -     472.22     472.22      63.75      17.49      31.18     112.42     619.20     242.39
 5         -          -         -     454.73     454.73      61.39      17.49      30.02     108.90     728.10     270.35
 6         -          -         -     437.24     437.24      59.03      17.49      28.87     105.38     833.49     294.50
 7         -          -         -     419.75     419.75      56.67      17.49      27.71     101.87     935.35     315.34
 8         -          -         -     402.26     402.26      54.31      17.49      26.56      98.35    1033.71     333.31
 9         -          -         -     384.77     384.77      51.94      17.49      25.40      94.84    1128.54     348.70
10         -          -         -     367.29     367.29      49.58      17.49      24.25      91.32    1219.86     362.08
11         -          -         -     349.80     349.80      47.22      17.49      23.09      87.81    1307.67     373.50
12         -          -         -     332.31     332.31      44.86      17.49      21.94      84.29    1391.96     383.20
13         -          -         -     314.82     314.82      42.50      17.49      20.78      80.77    1472.73     391.66
14         -          -         -     297.33     297.33      40.14      17.49      19.63      77.26    1549.99     398.01
15         -          -         -     279.84     279.84      37.78      17.49      18.47      73.74    1623.73     404.90
16         -          -         -     262.35     262.35      35.42      17.49      17.32      70.23    1693.96     410.08
17         -          -         -     244.86     244.86      33.06      17.49      16.17      66.71    1760.67     414.48
18         -          -         -     227.37     227.37      30.69      17.49      15.01      63.19    1823.86     418.20
19         -          -         -     209.88     209.88      28.33      17.49      13.86      59.68    1883.54     421.33
20         -          -         -     192.39     192.39      25.97      17.49      12.70      56.16    1939.70     423.97
21         -          -         -     174.90     174.90      23.61      17.49      11.55      52.65    1992.35     426.17
22         -          -         -     157.41     157.41      21.25      17.49      10.39      49.13    2041.48     428.01
23         -          -         -     139.92     139.92      18.89      17.49       9.24      45.62    2087.10     429.53
24         -          -         -     122.43     122.43      16.53      17.49       8.08      42.10    2129.20     430.78
25         -          -         -     104.94     104.94      14.17      17.49       6.93      38.58    2167.78     431.81
26         -          -         -      87.45      87.45      11.81      17.49       5.77      35.07    2202.85     432.64
27         -          -         -      69.96      69.96       9.44      17.49       4.62      31.55    2234.41     433.31
28         -          -         -      52.47      52.47       7.08      17.49       3.46      28.04    2262.44     433.84
29         -          -         -      34.98      34.98       4.72      17.49       2.31      24.52    2286.96     434.26
30         -          -         -      17.49      17.49  [illegible] [illegible] [illegible] [illegible]
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ASSUMPTIONS:  CUIP IN RATE BASE=   0%, RATE OF RETURN=14.5%, AFUDC RATE=14.5%, AFTER-TAX DISCOUNT RATE=12.0%
RESULTS    :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $ .76.44
                                                           ========

       ANNUAL      CUIP               PLANT IN       RATE              DEPRE-                  ANNUAL      TOTAL   PREW VAL
       CONSIR       BAL      AFUDC     SERVICE       BASE    RETURN   CIATION        FIT      REV REQ    REV REQ    REV REQ
    ---------  --------- ---------  ---------  ---------  --------- ---------  ---------  ---------  ---------  ---------
 1      15.00      15.00      2.10          -          -          -         -          -          -          -          -
 2      30.00      47.10      6.84          -          -          -         -          -          -          -          -
 3      40.00      94.02     13.63          -          -          -         -          -          -          -          -
 4      60.00     167.65     24.31          -          -          -         -          -          -          -          -
 5     115.00     304.96     44.51          -          -          -         -          -          -          -          -
 6     100.00     451.47     65.46          -          -          -         -          -          -          -          -
 7      65.00     581.93     84.38          -          -          -         -          -          -          -          -
 1          -          -         -     666.31     666.31      96.61     22.21      46.83     165.65     165.65      66.90
 2          -          -         -     644.10     644.10      93.39     22.21      45.27     160.87     326.52     124.92
 3          -          -         -     621.89     621.89      90.17     22.21      43.70     156.09     482.61     175.17
 4          -          -         -     599.68     599.68      86.95     22.21      42.14     151.31     633.92     218.67
 5          -          -         -     577.47     577.47      83.73     22.21      40.58     146.53     780.44     256.28
 6          -          -         -     555.26     555.26      80.51     22.21      39.02     141.74     922.19     288.76
 7          -          -         -     533.05     533.05      77.29     22.21      37.46     136.96    1059.15     316.79
 8          -          -         -     510.84     510.84      74.07     22.21      35.90     132.18    1191.33     340.94
 9          -          -         -     488.63     488.63      70.85     22.21      34.34     127.40    1318.73     361.72
10          -          -         -     466.42     466.42      67.63     22.21      32.78     122.62    1441.35     379.58
11          -          -         -     444.20     444.20      64.41     22.21      31.22     117.84    1559.19     394.90
12          -          -         -     421.99     421.99      61.19     22.21      29.66     113.06    1672.25     408.03
13          -          -         -     399.78     399.78      57.97     22.21      28.10     108.27    1780.52     419.25
14          -          -         -     377.57     377.57      54.75     22.21      26.54     103.49    1884.01     428.83
15          -          -         -     355.36     355.36      51.53     22.21      24.97      98.71    1982.73     436.99
16          -          -         -     333.15     333.15      48.31     22.21      23.41      93.93    2076.66     443.92
17          -          -         -     310.94     310.94      45.09     22.21      21.85      89.15    2165.81     449.79
18          -          -         -     288.73     288.73      41.87     22.21      20.29      84.37    2250.17     454.76
19          -          -         -     266.52     266.52      38.65     22.21      18.73      79.59    2329.76     458.94
20          -          -         -     244.31     244.31      35.43     22.21      17.17      74.81    2404.57     462.44
21          -          -         -     222.10     222.10      32.20     22.21      15.61      70.02    2474.59     465.38
22          -          -         -     199.89     199.89      28.98     22.21      14.05      65.24    2539.83     467.82
23          -          -         -     177.68     177.68      25.76     22.21      12.49      60.46    2600.29     469.83
24          -          -         -     155.47     155.47      22.54     22.21      10.93      55.68    2655.97     471.49
25          -          -         -     133.26     133.26      19.32     22.21       9.37      50.90    2706.87     472.85
26          -          -         -     111.05     111.05      16.10     22.21       7.80      46.12    2752.99     473.94
27          -          -         -      88.84      88.84      12.88     22.21       6.24      41.34    2794.33     474.82
28          -          -         -      66.63      66.63       9.66     22.21       4.68      36.55    2830.88     475.51
29          -          -         -      44.42      44.42       6.44     22.21       3.12      31.77    2862.65     476.05
30          -          -         -      22.21      22.21       3.22     22.21       1.56      26.99 [illegible] [illegible]
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[redacted] [redacted]

[illegible]

ASSUMPTIONS: CWIP IN RATE BASE= 100%, RATE OF RETURN=13.0%, AFUDC RATE=13.0%, AFTER TAX DISCOUNT RATE=15.0%
RESULTS : PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $ 318.54

	ANNUAL CONSTR	CWIP BAL	AFUDC	PLANT IN SERVICE	RATE BASE	RETURN	DEPRE-CIATION	FIT	ANNUAL REV REQ	TOTAL REV REQ	PRES VAL REV REQ
1	15.00	15.00	-	-	15.00	1.95	-	.96	2.91	2.91	2.51
2	30.00	45.00	-	-	45.00	5.85	-	2.88	8.73	11.63	9.13
3	40.00	85.00	-	-	85.00	11.05	-	5.43	16.48	28.11	19.74
4	60.00	145.00	-	-	145.00	18.85	-	9.26	28.11	56.23	36.04
5	115.00	260.00	-	-	260.00	33.80	-	16.61	50.41	106.64	61.10
6	100.00	360.00	-	-	360.00	46.80	-	23.00	69.80	176.44	91.20
7	85.00	425.00	-	-	425.00	55.25	-	27.15	82.40	258.84	122.25
1	-	-	-	425.00	425.00	55.25	14.17	27.15	96.57	355.41	153.82
2	-	-	-	410.83	410.83	53.41	14.17	26.25	93.82	449.23	188.49
3	-	-	-	396.67	396.67	51.57	14.17	25.34	91.08	540.31	203.01
4	-	-	-	382.50	382.50	49.73	14.17	24.44	88.33	628.64	221.99
5	-	-	-	368.33	368.33	47.88	14.17	23.53	85.58	714.22	237.99
6	-	-	-	354.17	354.17	46.04	14.17	22.63	82.84	797.06	251.45
7	-	-	-	340.00	340.00	44.20	14.17	21.72	80.09	877.15	262.22
8	-	-	-	325.83	325.83	42.36	14.17	20.82	77.34	954.49	272.22
9	-	-	-	311.67	311.67	40.52	14.17	19.91	74.60	1029.08	280.25
10	-	-	-	297.50	297.50	38.68	14.17	19.01	71.85	1100.93	286.92
11	-	-	-	283.33	283.33	36.83	14.17	18.10	69.10	1170.03	292.51
12		-	-	269.17	269.17	34.99	14.17	17.20	66.35	1236.39	297.17
13	-	-	-	255.00	255.00	33.15	14.17	16.29	63.61	1300.00	301.06
14				240.83	240.83	31.31	14.17	15.39	60.86	1360.86	304.29
15	-	-	-	226.67	226.67	29.47	14.17	14.48	58.11	1418.97	306.97
16	-	-	-	212.50	212.50	27.63	14.17	13.58	55.37	1474.34	309.20
17	-	-	-	198.33	198.33	25.78	14.17	12.67	52.62	1526.96	311.04
18	-	-	-	184.17	184.17	23.94	14.17	11.77	49.87	1576.84	312.55
19	-	-	-	170.00	170.00	22.10	14.17	10.86	47.13	1623.97	313.80
20	-	-		155.83	155.83	20.26	14.17	9.96	44.38	1668.35	314.82

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[illegible]                ========================

ASSUMPTIONS:  CWIP IN RATE BASE=  50%, RATE OF RETURN=13.5%, AFUDC RATE=13.5%, AFTER-TAX DISCOUNT RATE=15.0%
RESULTS     :  PRESENT VALUE OF TOTAL REVENUE REQUIREMENT= $ 319.23
                                                            ========

       ANNUAL      CWIP                PLANT IN  I   RATE                 DEPRE-                ANNUAL      TOTAL    PRES VAL
       CONSTR       BAL       AFUDC    SERVICE       BASE     RETURN     CIATION        FIT    REV REQ    REV REQ    REV REQ
      ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------
  1      15.00      15.00       1.01          -       7.50       1.01          -        .50       1.51       1.51       1.31
  2      30.00      46.01       3.11          -      23.01       3.11          -       1.52       4.62       6.13       4.80
  3      40.00      89.12       6.02          -      44.56       6.02          -       2.94       8.96      15.09      10.70
  4      60.00     155.13      10.47          -      77.57      10.47          -       5.12      15.59      30.68      19.61
  5     115.00     280.61      18.94          -     140.30      18.94          -       9.26      28.20      58.88      33.63
  6     100.00     399.55      26.97          -     199.77      26.97          -      13.19      40.16      99.04      51.00
  7      65.00     491.52      33.18          -     245.76      33.18          -      16.22      49.40     148.45      69.57
  1          -          -          -     524.69     524.69      70.83      17.49      34.64     122.96     271.41     109.76
  2          -          -          -     507.20     507.20      68.47      17.49      33.48     119.45     390.86     143.72
  3          -          -          -     489.71     489.71      66.11      17.49      32.33     115.93     506.79     172.38
  4          -          -          -     472.22     472.22      63.75      17.49      31.18     112.42     619.20     196.54
  5          -          -          -     454.73     454.73      61.39      17.49      30.02     108.90     728.10     216.89
  6          -          -          -     437.24     437.24      59.03      17.49      28.87     105.38     833.49     234.02
  7          -          -          -     419.75     419.75      56.67      17.49      27.71     101.87     935.35     248.42
  8          -          -          -     402.26     402.26      54.31      17.49      26.56      98.35    1033.71     260.50
  9          -          -          -     384.77     384.77      51.94      17.49      25.40      94.84    1128.54     270.64
 10          -          -          -     367.29     367.29      49.58      17.49      24.25      91.32    1219.86     279.12
 11          -          -          -     349.80     349.80      47.22      17.49      23.09      87.81    1307.67     286.22
 12          -          -          -     332.31     332.31      44.86      17.49      21.94      84.29    1391.96     292.14
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ASSUMPTIONS:  CWIP IN RATE BASE=   0%, RATE OF RETURN   .5%, AFUDC RATE=14.5%, AFTER-TAX DISCOUNT RATE=1
N    15    :  PRESENT VALUE OF TOTAL REVENUE REQUIREM.  = $ 335.64
                                                          ========

      ANNUAL      CWIP              PLANT IN      RATE             DEPRE-                 ANNUAL      TOTAL    PRES
      CONSTR       BAL     AFUDC     SERVICE      BASE    RETURN   CIATION       FIT     REV REQ    REV REQ    REV
      ------  --------  --------  ----------  --------  ------  ---------  --------  ---------  ---------  ------
  1    15.00     15.00      2.18           -         -       -          -         -          -          -
  2    30.00     47.18      6.84           -         -       -          -         -          -          -
  3    40.00     94.02     13.63           -         -       -          -         -          -          -
  4    60.00    167.65     24.31           -         -       -          -         -          -          -
  5   115.00    306.96     44.51           -         -       -          -         -          -          -
  6   100.00    451.47     65.46           -         -       -          -         -          -          -
  7    65.00    581.93     84.38                     -       -          -         -          -          -
  1                -         -        666.31    666.31   96.61      22.21     46.83     165.65     165.65     54
  2        -       -         -        644.10    644.10   93.39      22.21     45.27     160.87     326.52     99
  3        -       -         -        621.89    621.89   90.17      22.21     43.70     156.09     482.61    138
  4        -       -         -        599.68    599.68   86.95      22.21     42.14     151.31     633.92    170
  5        -       -         -        577.47    577.47   83.73      22.21     40.58     146.53     780.44    198
  6        -       -         -        555.26    555.26   80.51      22.21     39.02     141.74     922.19    221
  7        -       -         -        533.05    533.05   77.29      22.21     37.45     136.96    1059.15    240
  8        -       -         -        510.84    510.84   74.07      22.21     35.90     132.18    1191.33    257
  9        -       -         -        488.63    488.63   70.85      22.21     34.34     127.40    1318.73    270
 10        -       -         -        466.42    466.42   67.63      22.21     32.78     122.62    1441.35    282
 11        -       -         -        444.20    444.20   64.41      22.21     31.22     117.84    1559.19    291
 12        -       -         -        421.99    421.99   61.19      22.21     29.66     113.06    1672.25    299
 13        -       -         -        399.78    399.78   57.97      22.21     28.10     108.27    1780.52    306
 14        -       -         -        377.57    377.57   54.75      22.21     26.54     103.49    1884.01    311
 15        -       -         -        355.36    355.36   51.53      22.21     24.97      98.71    1982.73    316
 16        -       -         -        333.15    333.15   48.31      22.21     23.41      93.93    2076.66    319
 17        -       -         -        310.94    310.94   45.09      22.21     21.85      89.15    2165.81    323
 18        -       -         -        288.73    288.73   41.87      22.21     20.29      84.37    2250.17    325
 19        -       -         -        266.52    266.52   38.65      22.21     18.73      79.59    2329.76    327
 20        -       -         -        244.31    244.31   35.43      22.21     17.17      74.81    2404.57    329
 21        -       -         -        222.10    222.10   32.20      22.21     15.61      70.02    2474.59    330
 22        -       -         -        199.89    199.89   28.98      22.21     14.05      65.24    2539.83    331
 23        -       -         -        177.68    177.68   25.76      22.21     12.49      60.46    2600.29    332
 24        -       -         -        155.47    155.47   22.54      22.21     10.93      55.68    2655.97    333
 25        -       -         -        133.26    133.26   19.32      22.21      9.37      50.90    2706.87    334
 26        -       -         -        111.05    111.05   16.10      22.21      7.80      46.12    2752.99    334
 27        -       -         -         88.84     88.84   12.88      22.21      6.24      41.34    2794.33    335
 28        -       -         -         66.63     66.63    9.66      22.21      4.68      36.55    2830.88    335
 29        -                 -         44.42     44.42    6.44      22.21      3.12      31.77    2862.65    335
 30                          -         22.21     22.21    3.22      22.21      1.55      26.99    2889.64    335
```

8. If a utility's bond ratings are downgraded, its cost of capital presumably will be increased. Please provide an illustrative example for a typical utility, estimating the dollar amount per year of the increased cost, based on a typical capital structure.

The ICF study, which is attached, and is described in our response to question 7, also demonstrates that exclusion of CWIP from rate base leads to lower interest coverage, lower internal cash generation, and increased noncash AFUDC earnings as a percent of total earnings during the construction period. The decline in these financial indicators is perceived negatively by the investment community and may lead to a lowering of bond ratings. The lower the bond rating, the higher the cost of raising debt and equity capital -- ultimately leading to increased customer rates. The study points out, for example, over the period 1972-1981, utilities with Baa bond ratings paid an average of 69 basis points higher interest rates than utilities with A bond ratings. Inclusion of CWIP in rate base helps maintain higher bond ratings resulting in lower costs of new debt and equity capital. Two other studies which come to virtually the same conclusion are also enclosed. A study performed by the Texas Public Utility Commision staff, Cost-Benefit Analysis of Bond Rating, which analyzes the costs and benefits to ratepayers of alternative bond ratings among electric utilities. The single major conclusion of this paper is that electric utilities having sound financial condition and with higher bond quality ratings on average provide lower cost electricity than financially weaker, lower rated companies.

The other appended study is Reduction in Cost of Debt Capital Resulting from CWIP Inclusion, Appendix III of EEI's Initial Comments on FERC's 1981 rulemaking on CWIP. The study concludes that the incremental cost of new utility debt (and possibly, preferred stock) would decline by at least 65 basis points as a result of including CWIP in rate base without an AFUDC offset.

The following example shows the impacts of a utility's bond rating being downgraded on the revenue requirements which ratepayers must pay. The revenue requirements shown are those which would accrue on a $1 billion new coal plant to be built beginning in 1984. Two sets of revenue requirements are shown, each assuming no CWIP is allowed in rate base. The first column represents a no-downgrading case and the second column represents a downgrading which results in a 100 basis point increase in the cost of capital. The third column shows the dollar amount per year of the increased cost to ratepayer due to the downgrading. The downgrading increases the cost to ratepayers over the life of the plant by $102 million (8.7% of the total revenue requirements are vested in the plant) on a present value basis.

It has been shown in several studies that not allowing CWIP in rate base will led to higher costs of capital. This example shows that a 100 basis point increase in the cost of capital increases costs to ratepayers by 8.7%. While the exact capital cost difference will vary by utility, the inclusion of CWIP in rate base will lead to lower costs to ratepayers on a present value basis.

Impacts of Bond Rating Downgrade
(dollars in thousands)

Year	(1) Annual Revenue Requirements, No Downgrading	(2) Annual Revenue Requirements, With Downgrading	(3) Increased Revenue Requirements Due To Downgrading (2)-(1)
1984	0.0	0.0	0.0
1985	0.0	0.0	0.0
1986	0.0	0.0	0.0
1987	0.0	0.0	0.0
1988	0.0	0.0	0.0
1989	0.0	0.0	0.0
1990	0.0	0.0	0.0
1991	386038.0	420309.0	34,271.0
1992	371133.0	404061.0	32,928.0
1993	354298.0	385750.0	31,452.0
1994	338328.0	368471.0	30,043.0
1995	323522.0	352223.0	28,701.0
1996	309100.0	336491.0	27,391.0
1997	295159.0	321275.0	26,116.0
1998	281700.0	306574.0	24,874.0
1999	268242.0	291874.0	23,632.0
2000	254784.0	277174.0	22,390.0
2001	241326.0	262473.0	21.147.0
2002	227867.0	247773.0	19,907.0
2003	214409.0	233072.0	18,663.0
2004	200951.0	218372.0	17,421.0
2005	187492.0	203671.0	16,179.0
2006	176928.0	192065.0	15,137.0
2007	169258.0	183555.0	14,297.0
2008	161588.0	175043.0	13,455.0
2009	153918.0	166532.0	12,614.0
2010	146248.0	158021.0	11,773.0
2011	138577.0	149510.0	10,933.0
2012	130907.0	140999.0	10,092.0
2013	123237.0	132488.0	9,251.0
2014	115567.0	123977.0	8,410.0
2015	107897.0	115466.0	7,569.0
2016	100227.0	106955.0	6,728.0
2017	92557.0	98444.0	5,887.0
2018	84887.0	89933.0	5,046.0
2019	77217.0	81422.0	4,205.0
2020	69547.0	72911.0	3,364.0
Present Value over all years	1,177,945.0	1,280.386.0	102,441.0

Assumptions: (1) 30 year life, 46% income tax rate, 10% ITC rate, 6.8% revenue tax, 11% discount rate, normalization of tax benefits.

(2) Financing Assumptions

	Capital Structure	Cost, no downgrading	Cost, with downgrading
Long-Term Debt	50%	13%	14%
Common Equity	40%	16%	17%
Preferred Stock	10%	12%	13%

(3) Annual Construction Costs

Year	Millions $
1	10
2	120
3	260
4	300
5	200
6	100
7	10

Public Utility Commission
of Texas

MEMORANDUM

TO: Chairman Rollins
Commissioner Cowden
Commissioner Smith

FROM: Samuel C. Hadaway SCH

DATE: January 5, 1983

SUBJECT: Cost-Benefit Analysis of Bond Ratings

The attached paper is our evaluation of the bond rating issue. The first 15 pages are the formal text, which includes three sets of tables that pretty well tell the story. Table 1 shows that higher rated companies receive lower returns on equity from the Commission. Table 2 shows that total capital costs, including interest coverage, are lower for higher rated companies. Finally, Table 3 shows the average cost per kilowatt hour (¢/kwh) and cost of 750 kwh for various bond ratings for all major electric utilities in the U.S.

The single major conclusion of the paper is this: Electric utilities having sound financial condition and with higher bond quality ratings on average provide lower cost electricity than financially weaker, lower rated companies. Higher capital costs extracted by competitive capital markets from the weaker companies and the limited construction capabilities of these companies to switch to lower cost fuels result in significantly higher costs to their ratepayers.

Also, attached to the text are two appendices. Appendix A is a general review of the financial integrity issue. Appendix B is a specific review and critique of David Ewert's Dkt. No. 1517 financial integrity testimony from the 1978 TP&L case, which has received so much attention in the newspapers.

Attachment

A Cost-Benefit Analysis of Alternative Bond Ratings Among Electric Utility Companies in Texas

Prepared by

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Public Utility Commission
of Texas

H. M. Rollins
Chairman

George M. Cowden
Commissioner

T. G. Smith
Commissioner

File Texas PUC.

Executive Summary

The Texas Public Utility Commission (PUC) staff has analyzed the costs and benefits to ratepayers of alternative bond ratings among electric utilities. An examination of major investor owned electric utilities in Texas shows that companies with high bond ratings have been awarded lower returns on equity by the Commission. Table 1-A, page 6, contains the most recent return on equity (ROE) allowances granted by the PUC along with utility bond ratings, and Table 1-B, page [illegible], [illegible] authorized ROEs and bond ratings since 1977. Furthermore, total capital costs, including interest coverage, were found to be lower for the higher rated companies (see Table 2, page 11).

Finally, the staff reviewed the average cost per kilowatt hour (¢/kwh) and the cost of 750 kwh for all major investor owned electric utilities in the United States. A comparison of the cost of electricity to the residential consumer with utility bond ratings shows that the higher rated companies provide lower cost electricity to their ratepayers (Tables 3-A, page 13 and 3-B, page 14). The higher capital costs, limited financial flexibility and restricted capability to convert to lower cost fuels are characteristics of financially weaker companies and lower bond ratings. The evidence shows that these factors translate into significantly higher costs to electricity consumers.

To offer additional background on the subject, the staff has attached two appendices to the text of the paper. Appendix A, Maintaining Financial Integrity, provides a more detailed discussion of financial integrity issues and the bond rating process. Appendix B is a review and critique of another cost/benefit analysis of alternative bond ratings--David Ewert's testimony in Docket 1517, which has recently been the topic of much discussion.

A Cost-Benefit Analysis of Alternative Bond Ratings Among Electric Utility Companies in Texas

Introduction

In almost every major electric utility company rate case that comes before the Public Utility Commission of Texas, various parties argue about the financial condition of the utility company. The company typically argues that a sound financial condition provides lower ratepayer costs through a more efficient utility system, through the flexibility to construct power plants that burn lower cost fuels (such as coal or lignite versus natural gas and oil), and through lower capital costs paid to investors by companies with stronger financial ratings. All parties generally agree that these potential ratepayer benefits exist, but there is considerable controversy about the magnitude of the benefits and about the degree of financial strength required to obtain the benefits. Intervenor groups typically argue that company rate requests go beyond the level necessary for "adequate" financial strength. It is argued that too much additional profit is allowed, so that the net result is a higher overall cost to ratepayers.

The purpose of this paper is to examine the relationship between utility company profitability and the cost of electricity to ratepayers. The cost-benefit analysis first reviews the "financial integrity" question and shows how a utility's financial condition translates into a bond quality rating for the company's debt securities. The second section illustrates how PUC decisions about allowed rates of return affect financial condition and the cost of electricity. This section also reviews the actual capital costs allowed for each of the ten major investor owned generating electric utilities in the state. The third section summarizes data on the cost of electricity for essentially all major electric utilities in the country, with the companies divided into groups by bond ratings.

The single major conclusion of the paper is this: Electric utilities having sound financial condition and with higher bond quality ratings on average provide lower cost electricity than financially weaker, lower rated companies. Higher capital costs extracted by competitive capital markets from the weaker companies and the limited construction capabilities of these companies to switch to lower cost fuels result in significantly higher costs to their ratepayers.

Following the text of the paper, two appendices are attached to provide additional detail and technical information. Appendix A is a general review of the financial integrity issue, and Appendix B is a specific review and critique of financial integrity testimony presented by David C. Ewert in a 1978 Texas Power & Light case.

Financial Integrity and Bond Quality Ratings

The concepts of "fair rate of return" and "financial integrity" are abstract. There is no precise definition that regulators can apply to determine these elements in a rate case. The Hope and Bluefield decisions (explained more fully in Appendix A) provide a broad framework for considering rate of return and financial integrity issues. These landmark decisions established basic regulatory principles:

utilities are entitled to earn a rate of return sufficient to attract capital on reasonable terms and equal to returns found in firms of comparable risk. Accordingly, the Texas Public Utility Regulatory Act (PURA) states that the Commission should set rates to provide a "reasonable" and a "fair" return on invested capital. In the final analysis, however, only "symptoms" of financial integrity can actually be observed; then the decision maker's judgement must be applied to satisfy the Hope and Bluefield standards.

The most comprehensive, and the most widely followed, summary of financial integrity symptoms are the bond quality ratings assigned by the various independent bond rating agencies. These ratings (AAA, AA, etc.) provide an indication of investment safety, based on an analysis of all factors that may affect a company's financial condition. Evaluation of financial condition is used to judge expected ability to meet interest and principal payments as required by the company's bond indenture agreements with its investors. The resulting bond quality rating is typically the fundamental element in selection and pricing of bonds by institutional investors and investment bankers. A change in bond quality rating, due strictly to confiscatory regulatory action, would thus appear to violate the Hope and Bluefield standards and would clearly lead to increased capital costs, ultimately borne by the utility's ratepayers.

In the context of a rate case, financial witnesses typically debate the impact of a new set of rates, or a particular amount of rate increase, on the utility's financial condition. Under the heading of financial integrity, various financial performance ratios are reviewed and opinions are offered about the adequacy of specific ratios. These analyses are by nature very similar to the evaluations done by bond rating agencies. If prospective ratios, resulting from a given set of electric rates, are below norms established by the rating agencies, it is argued by the utility companies that rates should be increased to avoid bond downgradings. Since regulators have almost direct control over utility revenues, they have the ability to change performance ratios, and therefore bond ratings, almost at will. Thus, although no precise definition of financial integrity exists, bond ratings reflecting a utility's financial condition offer a reasonable guide for interpreting Hope and Bluefield requirements.

Cost of Capital Impact on Texas Ratepayers

In each rate case, in addition to direct expenses for operations, maintenance, etc., a utility is allowed to recover its capital costs (interest, preferred dividends, and equity return), plus associated federal corporate income taxes. A major portion of each rate case is devoted to deciding just what the level of these capital costs should be. For debt and preferred stock, the task is fairly straightforward; actual known interest on debt and dividends on preferred stock are verified, examined for reasonableness, and then, if appropriate, allowed as part of the company's return on investment. The preferred dividend, since it must be paid from after-tax dollars, is "grossed up" to allow for required corporate income tax payments.

The return allowed on common stock is handled in a similar manner, but is somewhat more controversial. Unlike debt and preferred holders, the common stock investor has no guaranteed interest payment nor specified dividend amount.

This return on equity (ROE), rather, depends on uncertain dividends declared by the company's board of directors and growth (or decline) in the company's common stock price. Thus, the ROE portion of return must be determined by estimating what common stock investors require to continue their investment in the company, or what new investors would require to invest additional equity funds.

The PUC has consistently used a risk compensation approach to ROE determination; i.e., a recognition that common stock investors will only provide equity capital to a utility if they expect a return that is competitive with returns from alternative investments of similar risk. Table 1-A contains the most recent ROE allowances granted by the PUC in rate cases, along with bond quality ratings. Table 1-B reviews the authorized ROEs and bond ratings on a year-by-year basis since 1977. As the tables show, the Commission has been consistent in applying the risk-return principle—the result being consistently lower allowed ROEs for the lower risk triple-A and double-A rated companies. (Appendix A also provides a detailed discussion of capital market risk-return tradeoffs.) Similar to the preferred dividend, equity returns are subject to federal income taxes, and therefore, taxes must be paid and added to the cost of service.

TABLE 1-A

PUBLIC UTILITY COMMISSION C TEXAS

MOST RECENT INVESTOR OWNED GENERATING ELECTRIC UTILITY RATE CASES

Docket No.	Utility	Amount Requested ($ Mil.)	Amount Granted ($ Mil.)	% CWIP Allowed in Rate Base	ROE Granted	Bond Rating	Final Order Date
3250	Texas Electric Service Company	123.0	69.4	50	15.50	AAA	10/80
3460	Dallas Power and Light Company	81.7	55.8	79	16.00	AAA	2/81
4321	Texas Power and Light Company	188.1	72.0	60	16.00	AAA	6/82
4387	Southwestern Public Service Company	59.0	45.2	100	16.17	AA	6/82
4400	Central Power and Light Company	156.0	92.7	65	16.50	AA	7/82
4510	Gulf States Utilities Company	145.8	57.5	68	17.15	BBB	10/82
4540	Houston Lighting and Power Company	335.6	182.7	100	16.35*	A+	11/82
4620	El Paso Electric Company	58.0	35.0	65	16.77	A	12/82
4628	Southwestern Electric Power Company	24.2	13.2	75	16.25	AA	11/82
4716	West Texas Utilities Company	20.4	10.2	100	16.25	AA	12/82

* 16.85 before 50 basis point management penalty.

TABLE I-B

PUBLIC UTILITY COMMISSION OF TEXAS
AUTHORIZED RATE OF RETURN
ON EQUITY BY YEAR

	Company	Final Order	Bond Rating	ROE Authorized
1977	CP&L	1/5/77	AA	14.00%
	El Paso	10/25/77	AA-	14.00%
	TESCO	11/2/77	AAA	13.50%
	TP&L	4/25/77	AAA	13.75%
1978	DP&L	5/8/78	AAA	13.75%
	El Paso	11/9/78	AA-	14.23%
	GSU	5/30/78	A+	14.00%
	HOU	11/20/78	AA	13.80%
	SPS	10/2/78	AA	13.85%
	TESCO	10/20/78	AAA	13.75%
	TP&L	5/8/78	AAA	13.75%
1979	DP&L	10/12/79	AAA	14.50%
	El Paso	9/13/79	AA-	15.50%
	GSU	10/29/79	A	15.00%
	TESCO	10/12/79	AAA	14.50%
1980	CP&L	1/23/80	AA	15.50%
	El Paso	8/14/80	AA-	16.25%
	GSU	10/16/80	A	16.10%
	HOU	1/9/80	AA	15.00%
	HOU	9/15/80	AA	15.80%
	SPS	6/2/80	AA	15.63%
	TESCO	10/3/80	AAA	15.50%
	TP&L	4/29/80	AAA	15.50%
	WTU	12/9/80	AA	15.35%*

* Company stipulated to 15.35% ROE without market-to-book adjustment. With typical adjustment, ROE would have been 15.85%.

TABLE 1-B
(continued)

PUBLIC UTILITY COMMISSION OF TEXAS
AUTHORIZED RATE OF RETURN
ON EQUITY BY YEAR

	Company	Final Order	Bond Rating	ROE Authorized
1981	DP&L	2/26/81	AAA	16.00%
	GSU	9/17/81	A	16.50%
	HOU	10/15/81	A+	16.25%
	SWEPCO	6/18/81	AA	16.33%
	TP&L	8/5/81	AAA	15.71%
1982	CP&L	7/29/82	AA	16.50%
	El Paso	12/30/82	A	16.77%
	GSU	10/22/82	BBB	17.15%
	HOU	11/30/82	A+	16.35%*
	SWEPCO	11/4/82	AA	16.25%
	SPS	6/23/82	AA	16.17%
	TP&L	6/23/82	AAA	16.00%
	WTU	2/11/82	AA	16.20%
	WTU	12/27/82	AA	16.25%

* 16.85% before 50 basis point management penalty.

Once the proportions of capital provided by each source (debt, preferred, and equity) are determined and appropriate costs for each source assigned, the overall cost of capital, including tax effects, can be determined. The following table illustrates the mechanical calculations for a hypothetical utility with a typical capital structure.

Source	% of Capital		% Cost		Weighted Cost		Tax Factor*		Capital Cost Including Tax
Debt	50%	x	10%	=	5.0%	x	1.00	=	5.0%
Preferred	10%	x	12%	=	1.2%	x	1.85	=	2.2%
Equity	40%	x	16%	=	6.4%	x	1.85	=	11.8%
	100%				12.6%				19.0%

*The tax factor is $\frac{1}{1 - \text{tax rate}}$. Assuming a 46% corporate rate, $\frac{1}{1 - .46} = \frac{1}{.54} = 1.85$.

The table is a simplified version of the actual total return calculation used in each rate case. Applying the resulting 19.0 percent return from the bottom of the table to a company's allowed rate base would determine the total return and federal income tax dollars actually charged to ratepayers. From the example, it is easy to see that higher interest, preferred dividends, and equity costs required for lower rated utilities translate directly into higher costs to those utilities' ratepayers.

For the present cost-benefit analysis, the total return calculation can also be used to illustrate the interest coverage ratio, which is one of several key ratios closely reviewed by the rating agencies. This ratio is actually calculated by dividing total return dollars including taxes by interest costs. For simplicity in the hypothetical example above, the ratio can be calculated by dividing the 19.0 percent total return by the 5.0 percent weighted cost of debt.

$$\begin{array}{c}\text{Interest}\\ \text{Coverage Ratio}\end{array} = \frac{\text{Total Capital Cost Including Tax}}{\text{Weighted Cost of Debt}} = \frac{19.0\%}{5.0\%} = 3.8 \text{ times}$$

A careful review of the hypothetical return calculations will show that any change in the capital structure percentages or capital cost components will change the total cost and coverage results. Appendix B provides an illustration of how stronger capital structures and lower capital costs lead to lower net costs to their ratepayers.

Table 2 offers an acid test of the bond rating/capital cost issue. The table lists the actual capital cost percentages, including associated income taxes, allowed by the PUC in the ten major generating electric companies' most recent rate cases. The "Capital Costs" column reflects the entire cost of return and interest coverage actually provided by ratepayers through electric rates. The table clearly demonstrates an inverse relationship between bond quality ratings and capital and coverage costs. The higher rated companies have lower costs. This result follows directly from the lower explicit capital costs paid to investors and from the additional financing flexibility available to the stronger companies. It should be emphasized that these are not hypothetical numbers. Rather, they are the actual capital costs paid by ratepayers of electric utility companies in Texas.

TABLE 2

CAPITAL COSTS FOR GENERATING ELECTRIC UTILITIES IN TEXAS

Company	Bond Rating Moody's/S&P	Capital Costs Including Taxes in Cost of Service
Southwestern Public Service Company	Aa2/AA	17.46
Texas Electric Service Company	Aaa/AAA	17.76
Dallas Power & Light Company	Aaa/AAA	17.89
Texas Power & Light Company	Aaa/AAA	18.82
Southwestern Electric Power Company	Aa/AA	18.90
West Texas Utilities Company	Aa1/AA	19.06
Houston Lighting & Power Company	A1/A+	19.12
Central Power & Light Company	Aa2/AA	19.18
Gulf States Utilities Company	Baa2/BBB	19.44
El Paso Electric Company	A2/A	21.02

Cost of Electricity by Bond Rating Category

The capital cost discussion in the previous section shows that total capital costs and income taxes are lower for higher rated Texas companies. Although importantly affected by PUC actions, capital costs are but one element in the total cost of utility service. Other factors such as system efficiency and fuel sources are also crucially important. Financially strapped utilities in some parts of the country that have been unable or unwilling to upgrade system efficiency and diversify to more economical fuel sources have had, and will continue to have, extremely high electric rates. On the other hand, financially sound utilities with the ability and incentive to improve system efficiency and seek lowest cost fuel sources have consistently produced lower net costs for their ratepayers.

To evaluate the "bottom line" impact on ratepayers, the PUC staff prepared a specific study of electricity costs and reviewed other information available to the Commission. In the PUC study, price per kilowatt hour (¢/kwh) data collected by Argus Research for essentially all major investor owned electric utilities in the United States were analyzed. Table 3-A summarizes these data by bond rating category for 1981. Table 3-B summarizes a similar study comparing the average cost of 750 kilowatt hours of monthly residential useage among various bond rating categories for 1976, 1980, and 1982. Similar to the capital cost data, these tables show a clear inverse relationship between bond ratings and the actual cost of electricity.

TABLE 3-A

SUMMARY OF COST OF ELECTRICITY

BY BOND RATING CATEGORY

Bond Rating	Aaa	Aa	A	Baa	Less Than Baa
1. 1981 Average Residential ¢/kwh	5.68	6.10	6.49	6.32	7.13
2. 1981 Median Residential ¢/kwh	5.74	5.86	6.25	6.13	6.88
Number of Companies	3	36	41	35	3
3. 1981 Average Residential ¢/kwh (Excluding Outliers)*	5.68	6.10	6.50	6.53	7.13
4. 1981 Median Residential ¢/kwh (Excluding Outliers)*	5.74	5.86	6.29	6.34	6.88
Number of Companies	3	36	36	33	3

* The total sample of 118 companies includes six predominantly hydro powered utilities with rates below one-half their respective group averages. Also, Consolidated Edison in the A-rated category had a price of 14.85¢/kwh for 1981, with a substantial portion of the price made up of municipal taxes. These extreme values are included in the top two rows but excluded from the bottom two rows.

Source: Argus Utility Scope Special Report, August 6, 1982.
Argus Research Corporation, New York, New York.

TABLE 3-B

COMPARISON OF BOND RATINGS OF ELECTRIC UTILITIES[*]

TO COST OF 750 KWH OF RESIDENTIAL SERVICE

1976, 1980, and 1982

	1976	
Standard & Poor's Bond Rating	Number of Companies	750 kwh Residential Service Cost
AAA	5	$26.35
AA	43	28.41
A	53	30.18
BBB	29	32.09
	130	

	1980		1982	
Moody's Bond Rating	Number of Companies	750 kwh Residential Service Cost	Number of Companies	750 kwh Residential Service Cost
AAA	4	$32.75	3	$41.26
Aa	39	37.01	38	45.72
A	45	38.10	52	50.72
Baa	27	41.09	37	47.95
Ba	3	46.00	3	54.45
B	-	-	1	53.87
	118		134	

Note: Residential service cost is average of bills for each bond category at regular rate including adjustments.

Data Sources: Typical Residential, Commercial and Industrial Bills — Investor-owned Utilities, Regulatory Policy Analysis Division of the Edison Electric Institute, Winter of 1976, 1980, and 1982

Moody's Public Utility Manual

Standard & Poor's Bond Guide

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[*] Table taken from Texas Electric Service Company Study of Cost of Electricity, 1982.

Conclusion

In any cost-benefit analysis, there are always factors that are difficult to quantify. For this reason the preceding analysis has attempted to go directly to the bottom line cost of electricity to ratepayers. The review of rate case ROE allowances in Table 1 shows that the PUC has consistently allowed lower equity returns for the triple-A and double-A rated companies and higher equity returns for the more risky, lower rated companies. Table 2 expands the comparison to include the total cost of capital and income taxes. Again it is clear that the stronger companies have lower overall capital costs. Finally, Table 3 shows the most fundamental relationship in the study. The data clearly indicate that higher rated companies provide lower cost electricity to their ratepayers.

Although many pages could be devoted to why stronger companies provide cheaper electricity, a very concise, common sense approach is offered in a recent study funded by the U.S. Department of Energy.[1] The study states that poor financial condition and resulting "investment minimization" strategies by utilities in many parts of the country will cost ratepayers "literally billions of dollars" in higher rates over the next two decades. The study points to declining system maintenance and efficiency, lack of fuel conversion programs, and direct capital cost penalties as burdens on the weaker utilities' ratepayers. In conclusion, while many factors will affect electricity costs in the future, the data in this study indicate that financially weak utilities do and will continue to charge higher electricity rates to their consumers.

[1] Peter Navarro, Energy & Environmental Policy Center, John F. Kennedy School of Government, Harvard University, 1982.

Appendix A

MAINTAINING FINANCIAL INTEGRITY

Robert C. Klemkosky*

Legal Foundations

Public utility firms are natural monopolies because they are a single seller of a service for which there are no good substitutes. Thus, they have the opportunity to earn abnormally high profits because they are not disciplined by the forces of a freely competitive market. To prevent monopoly profits, regulatory agencies serve as a surrogate for a free and competitive marketplace. The economic objective of regulating monopolies is to determine that price which will motivate the firm to produce the greatest amount of service consistent with both its costs and consumer demands.

The public utility industry is a special type of monopoly. It is capital intensive, and once the capital investment is made, the firm is prohibited from moving from a particular geographical area. This inflexibility is generally offset by the protection of an exclusive franchise granted the firm to provide services in a particular geographical area. Also, public utilities enjoy a relatively continuous and inelastic demand for their services. This certainty of demand tends to offset the risk of the large capital investments needed to produce the services.

There is little argument about the broad purpose of regulating public utilities. Regulators have a dual responsibility to meet the needs of both the consumer and the investor. To accomplish this, regulators must determine the total cost of providing services and make sure that these costs are reflected in utility rates, since customers should pay the full cost of the service they receive. On the other hand, regulators must insure that the consumer is not exploited by allowing the firm to earn monopoly profits. Since public utilities are predominantly privately owned firms and rely on capital markets for external financing needs, regulators must also insure that a fair rate of return is earned by the providers of capital. This dual responsibility is essential if public utilities are to provide quality service to consumers at the lowest costs, and still retain the capability to attract sufficient capital to maintain reliability and meet increasing demand for services.

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The right of legislatures to regulate public utilities has been long accepted. In 1877 the U. S. Supreme Court recognized the right of regulation in the Munn vs. Illinois decision. This decision prescribed that the rate of return to a public utility was to be determined solely by a regulatory body and the judicial process was not to be involved. In 1898, the Court reversed itself in the Smith vs. Ames decision and decided that the reasonableness of an allowed return was an issue for judicial investigation.[1]

The most important aspects of the Smith vs. Ames decision were the criteria established by the Court for determining reasonable returns. The Court held that:

> The basis of all calculations as to the reasonableness of rates to be charged by a corporation . . . must be the fair value of the property being used by it for the convenience of the public. And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience.[2]

The above decision set a precedent for using the "fair value" of the public utility's assets as the basis upon which returns should be computed. While Smith vs. Ames mentioned four possible criteria by which a "fair value" base might be determined; one, the present cost of construction, dominated. Consequently, commission hearings were filled with testimony from engineers, accountants, and economists, all directed at deriving what was the "correct" current reproduction cost of a utility's capital stock. Once the commission determined the "fair value" of the rate base, a fairly standard rate of return was applied to the rate base to compute the investor's compensation.

While Smith vs. Ames was primarily concerned with determining the value of the rate base, the Bluefield Water Works and Improvement Company vs. West Virginia Public Service Commission case in 1923 addressed the issue of the proper rate of return. This decision stated:

> What annual rate (of return) will constitute just compensation depends upon many circumstances and must be determined by the exercise of a fair and enlightened judgment, having regard to all relevant facts. A public utility is entitled to such rates as will permit it to earn a return on the value of the property . . . . equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time, and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally.[3]

In summary, the Bluefield case defined a fair and reasonable rate of return as one that is "equal to (others) . . . attended by corresponding risks" and "assures confidence in the financial soundness of the utility." Thus, this decision established the "comparable earnings" and the "financial integrity" standards as governing principles in setting rates of return.

In 1944, the Supreme Court issued its final statement on the fair rate of return to public utilities with the Federal Power Commission vs. Hope Natural Gas Company case. This was a three part decision; the first part established the "end result" doctrine:[4]

> Under the statutory standard of "just and reasonable" it is the result reached not the method employed which is controlling.

Secondly, the Court reiterated the conclusions reached in the Bluefield case:

> The return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise so as to maintain its credit and to attract capital.

And finally, the decision rejected the Smith vs. Ames "fair value" rate base:

> Rates which enable the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risk assumed certainly cannot be condemned as invalid, even though they might produce only a meager return on the so-called "fair value" rate base.

In other words, the Hope decision reversed Smith vs. Ames "fair value" rate base by arguing that the use of market values of stocks and bonds resulted in a hopelessly circular argument in the sense that the primary determinant of market value is anticipated earnings, whose levels are governed by what fair value the Commissions decide upon. To have fair value depend upon fair value was of little help, the Court concluded. Thus the Hope decision did not set any formal criteria but indicated that the rate of return should represent reasonableness in regards to the interests of consumers and investors. The Hope requirement that the outcome of the regulatory hearings should not impair the ability of the utility to attract capital plus the Bluefield dictum that owners were entitled to returns equal to those found in firms of comparable risk, form the foundation for most regulatory decisions. Since capital attractiveness and comparable risk are concepts dealing with the rate of return on capital, the years since the Hope case have seen a gradual decrease in controversy over what the rate base should be: most regulatory agencies now require that it be calculated on an original cost basis. The emphasis has shifted to determining the proper rate of return, which is an estimation requiring substantial "enlightened judgement." The method of estimation is less important than the concept that the end result be "fair and reasonable." Moreover, the test of fairness is the compliance of the end result with the comparable earnings, capital attraction, and financial integrity standards.

Bond Ratings

The ability to attract capital and maintain credit worthiness can be measured by the ratings of the public utility's debt. Bond rating agencies, such as Moody's, Standard and Poors', and Duff and Phelps, provide the investment community with their opinions on the quality of most large, publicly held corporate and governmental bond issues. Their bond ratings are designed to rank issues in order of the probability of default - the inability to meet interest or sinking fund payments or repayment of principal. Thus, "triple-A" bonds are those judged to have a negligible risk of default and are of the highest corporate quality. "Double-A" bonds are also of high quality but not quite as free of default risk as the triple-A. Bonds rated A and BBB (Baa) are generally categorized as medium-quality obligations, with the latter having a higher degree of default risk than the former. Bonds rated below the first four rating categories would contain a higher degree of default risk and would be considered speculative investments. These would include the BB (Ba) and B as well as the various C rated issues.

How well do the bond ratings correlate with the actual default experience? The National Bureau of Economic Research made an extensive analysis of investor experience with corporate bonds sold during the period 1900-43. The following shows the percentage of bonds in each rating category at the time of issuance which subsequently defaulted:[5]

Rating Category (composite rating)	Default Rate (percent of par value)
1 (highest quality)	6
2	6
3	13
4	19
5-9 (lowest quality)	42

Because these default percentages reflect the great depression of the 1930s, they are not representative of the default experience in the post WW II era. However, the agencies' accuracy in ranking issues by probability of default was impressive. The two highest quality groups have the best default record. Twice as high a percentage of the third quality group and three times as high a percentage of the fourth quality group defaulted as the two highest quality groups. Over 40 percent of the speculative bonds defaulted. During the 1950s, 1960s, and 1970s, the default rate on all corporate bonds rated BBB (Baa) or better has been substantially less than that experienced in the first half of the century. However, there still are individual cases, such as Penn Central, where corporations with high and medium-quality rated bonds experienced financial difficulties.

The important factors that determine bond ratings in general would include:

1. The level and trend of fixed charge coverage ratios. This is the relationship between earnings and interest charges or earnings and total debt service including sinking fund and principal repayment requirements.

2. The level of long-term debt relative to the firm's equity. In other words, the capital structure and financial leverage of the firm.

3. The firm's liquidity, including an analysis of accounts receivable, inventory, and short-term liabilities.

4. The size and economic significance of the company and of the industry in which it operates. A large company in an "indispensable" industry is looked upon more favorably than a smaller company.

5. The priority of the specific debt issue with respect to bankruptcy or liquidation proceedings and the overall protective provisions of the issue.

6. The management of the firm.

The rating agencies evaluate several other, industry-specific factors when determining credit ratings of electric utility companies. Some of these factors are quantitative and financial in nature, while others are qualitative and non-financial.[6] The rating criteria discussed below all have an important, but in some cases hard to measure, impact on a utility's credit rating.

1. Construction Expenditures - The larger the construction program, the greater the perceived risk. A number of factors contribute to the risk of a large

construction program: 1) potentially large cost overruns, 2) uncertain completion dates, 3) changing environmental standards and government energy policies, 4) larger operating risks, 5) more financing risks because of the potential inability to finance, and 6) regulatory risks. The rating agencies think that a utility's annual projected construction expenditures generally should not exceed 10% of a company's capitalization. Outlays over 15% are a signal of serious potential problems. The agencies consider forecasts of construction expenditures five years in the future. In their view, the assumptions used to support these forecasts are equally important. Major concerns are: 1) whether the projected construction program is based upon high or low estimates of demand growth, 2) the flexibility in adjusting the construction program upward or downward in the future, and 3) the use of reasonable escalation factors. Obviously, the past track record of construction planning and expenditures is important. In summary, the larger the construction program relative to capitalization, the more important the other operating and financial ratios become.

II. Internal Cash Generation - Probably the most important factor affecting a utility's credit rating and its ability to attract capital is its expected cash flow from internal sources. The level of earnings is the primary determinant of internal cash flow. The level of earnings is affected by 1) the return actually earned on equity, 2) the equity base it's earned on, and 3) the required dividends on preferred and common stock. Another major source of internal cash flow is depreciation, which represents the recovery of the past capital investment carried on the financial statements at original cost. In an inflationary period, this source of funds becomes less and less adequate as inflation accentuates the true replacement costs of capital investments. Additionally, the deferred taxes, which are accrued annually, are a source of internal cash because they are long-term liabilities with a zero cost. Companies that flow through the tax benefits from accelerated depreciation and investment tax credits to earnings lack this source of internal funds. Finally, the allowance for funds used during construction (AFUDC), while it is included in current earnings, is not a source of internal cash. In most cases, when AFUDC is a sizable percentage of earnings, it is excluded from earnings in computing internal cash flows.

In summary, the rating agencies look at the generation of internal cash flows from operations, after dividends and excluding AFUDC, in relation to capital outlays and existing debt service. For electric utilities, a net internal cash flow less than 35-40% of capital outlays is considered below average. If such a deficiency exists, and other compensating factors are not available, the credit rating of a utility will suffer, and its cost of attracting capital will increase.

III. Coverage - This is a basic indicator of a utility company's ability to meet its interest payments and other fixed obligations like sinking fund payments, repayment of debt, and lease payments. While numerous types of coverage ratios can be computed, the most important one is the pretax ratio of earnings excluding AFUDC relative to total fixed charges. Because this ratio does not recognize the utility's ability to refund existing debt, the agencies also use the times interest earned coverage ratio. This ratio compares pretax earnings before interest with the level of interest payments. Obviously, the higher the level of coverage of total fixed charges and interest, the less the probability of default on an obligation, and the safer the debt held by investors. For most high quality issues (AA-AAA), the minimum coverage ratio is 3.0-3.5 times. For a medium quality (A) rating, the coverage is expected to be in the 2.50-2.75 range. A pretax coverage below 2.0 is deficient even for a BBB-Baa credit rating.

It is important to note that the rating agencies do not analyze coverage ratios in isolation. Other factors like operating and financial risks, cash flows, future capital outlays, regulatory environment, and management will influence the adequacy of a coverage level to maintain a particular credit rating.

IV. Capital Structure - The extent to which a firm uses debt financing, or financial leverage, has implications for creditors and investors. Creditors look to the funds supplied by equity holders as a cushion or margin of safety. The less the amount of funds supplied by the owners, the greater the risk borne by the creditors. From the investors' point of view, if the firm earns more on borrowed funds than it pays as a fixed interest rate, the difference accrues to the firm's owners, and financial leverage is favorable. In the opposite case, if the firm earns less on borrowed funds than it pays as interest, financial leverage is unfavorable, and the cost is borne by the owners. Thus the ratios of total debt to total assets or debt to equity, and the debt to net plant are usually computed to measure the portion of funds supplied by creditors versus owners. These ratios would normally be inversely related to the coverage ratios.

V. Financing Flexibility - Experience indicates that the capital markets are not always accessible for raising long-term debt, or are accessible at a high cost. Thus it is becoming increasingly important that utilities have good financing flexibility if they are to maintain their credit ratings. Important factors in determining flexibility include: 1) the availability of bank credit and the potential to issue commercial paper, 2) restrictive covenants on existing debt and preferred stock, 3) the ability to sell preferred stock or common stock which depends upon a reasonable market to book ratio, 4) vulnerability to short-term operating and economic risks, 5) relative use of off-balance sheet financing and the potential to lease or sell the more liquid company assets in emergencies, and 6) flexibility to reduce capital outlays without endangering service to consumers.

VI. Regulatory Climate - The ability of a utility to fund its construction program and meet current and future service requirements is ultimately dependent upon the earnings and cash flow levels allowed, but not guaranteed, by the jurisdictional regulatory body. The rating agencies evaluate the rate-making procedures and accounting treatments mandated by state laws and court interpretations. Specific concerns are: 1) past rulings on rates of return and the allowed rate base, 2) the extent of regulatory lag, 3) the availability or lack of interim and/or emergency rate relief, and preconditions for approval, 4) attitudes toward interest coverage requirements and the need to maintain credit ratings, 5) the presence or absence of short-term protection against volatile fuel price and purchased power fluctuations, and 6) all accounting and rate making procedures which affect the quality of earnings and resultant cash flows. The statutory requirements as well as past regulatory actions can be used to prejudge the likely outcome of rate cases and thus reduce some of the uncertainty for creditors and investors alike.

VII. Management - This is a difficult area to analyze objectively, but it has an important impact on the future safety of debt. Evaluations are based upon:

1) the long-term track record of success and failure, 2) evidence of sophisticated planning for the future as well as the flexibility management builds into the plans, 3) demonstration of conservation in operations and planning, 4) aggressiveness and leadership in attacking industry problems, 5) management's views toward balancing public and private priorities, and 6) credibility with the financial community, the public, the media, and the regulatory agencies.

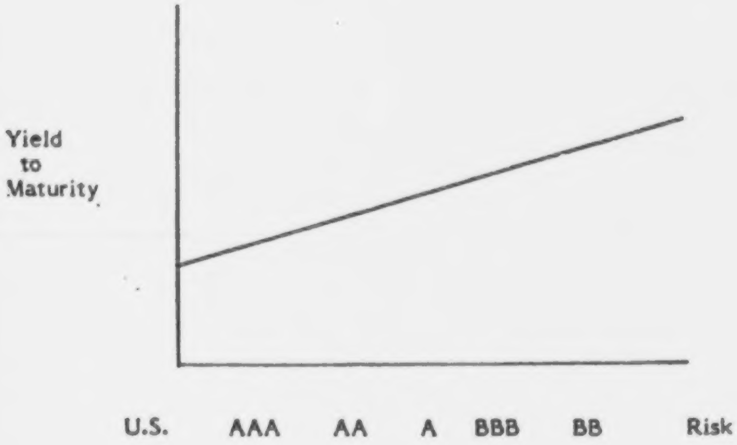
Standard and Poor's has provided the following guidelines to the credit rating process.

1. There is no magic indicator of strength or weakness; on the contrary, there are many indicators, none of which is a consistent prognosticator of anything.
2. Quantitative indicators are only tools of analysis; historical financial ratios are snapshots of the past, and projected ratios are no more than educated guesses of the future.
3. Quantitative financial indicators do not emerge from a vacuum. On the contrary, they are the end-product of interacting economic forces, of external developments, of management planning and of regulatory policy-making.
4. Regulation and management are not passive factors affecting a credit rating but instead are dynamic responsive forces, acting on behalf of important public and fiduciary responsiblities.
5. Financial indicators can point out strengths and weaknesses, but some indicators may be important in some cases and unimportant in others. What is necessary is knowing the difference.

6. The qualitative, not quantitative indicators are often more important in evaluating credit safety.
7. The rating process, at its best, is not a mechanistic, statistical process but an objective, judgemental process that weighs strengths and weaknesses of all forms to develop ratings that are proper representations of credit risk.

Risk-Return Structure

It is generally assumed that investors are risk-averse. For assuming more risk, they expect a higher return. Therefore, if investors have the opportunity to buy default-free U.S. Treasury bonds with a yield to maturity of 12 percent, they would require higher rates of return on corporate bonds and generally, still higher returns on common stocks. For fixed income (debt) securities, this relationship can be shown in the risk structure of interest rates. This shows the relationship between yield to maturity and risk, with all other factors such as maturity, collateral, etc., the same. Using the bond ratings as a surrogate for risk, this relationship would be as follows:



The years to maturity for each of the bonds have to be identical, or the relationship would be affected by the term structure of interest rates, which is the relationship between yield to maturity and time to maturity with risk held constant. Given the above assumption, the risk structure relationship will always be upsloping. There will only be slight differences in yields to maturity at the high quality end of the risk spectrum, but the range of available yields for any risk class would widen considerably if one moved into the lower quality end of the risk spectrum. This is because of the increased uncertainty in evaluating the probability of default in the higher risk debt securities.

It should also be pointed out that this risk structure relationship is not constant but moves up and down with the general level of interest rates. In addition, the slope will change as investors as a whole become more or less quality conscious. As an example, the risk structure of interest rates for June, 1982 was as follows:

	Beg. of Month	End of Month	June Avg.
U.S. Treasury Bonds	14.00	14.25	14.14
PU Bonds:			
Aaa	14.96	15.55	15.32
Aa	15.22	16.04	15.78
A	16.13	16.56	16.42
Baa	16.87	17.32	17.21
PU Preferred Stock			
aa	13.78	14.30	13.91
a	14.07	14.69	14.32
baa	15.03	15.67	15.34

Obviously, the better the bond rating at any point in time, the easier and less costly it will be to attract new capital. Utilities and regulatory agencies use the maintenance of the credit standing and its concomitant effect on attracting capital as a key element in regulatory rate hearing decisions.

Footnotes

1. Much of this section is from the dissertation of Bruce H. Fairchild, Estimating the Cost of Equity to Texas Public Utility Companies, Ph.D. Dissertation, The University of Texas at Austin, May 1980, pp. 15-20.

2. Smith vs. Ames, 169 U. S. 466 (1898), at 546-547.

3. Bluefield Waterworks and Improvement Company vs. West Virginia Public Utility Commission, 262 U. S. 679 (1923), at 693.

4. Federal Power Commission vs. Hope Natural Gas Company, 320 U. S. 591 (1944), at 603-605.

5. W. Braddock Hickman, Corporate Bond Quality and Investor Experience, (New York): National Bureau of Economic Research, 1958, p. 10. The data cover regular issues only, excluding bonds issued as part of a reorganization.

6. This section is a synthesis of two papers published by Standard and Poor's Corporation: "Utility Capital Attraction and Financial Indicators," June 1978, and "Fundamental Approach to Public Utility Bond Ratings," January 1976.

Appendix B

A REVIEW AND CRITIQUE OF TESTIMONY BY DAVID C. EWERT FROM DOCKET NO. 1517, TEXAS POWER & LIGHT COMPANY, 1978

In a 1978 Texas Power & Light Company rate case before the Texas Public Utility Commission (PUC), Dr. David C. Ewert testified as an expert witness on behalf of Tex-La Electric Cooperative, an intervenor in the case. Dr. Ewert asserted that the costs of maintaining a triple-A bond rating exceeded the benefits, and attempted to show that the interest savings associated with a higher bond rating would be more than offset by the cost of maintaining a higher coverage ratio. The Commission staff conducted a similar but more complete analysis and found evidence to support just the opposite conclusion, that there is a net ratepayer benefit to maintaining a triple-A bond rating. This appendix will review and critique Ewert's analysis and provide a numerical counter-example based on more realistic data and assumptions. The staff's analysis indicates that even using Ewert's limited framework, higher bond ratings can mean lower costs to ratepayers.

Ewert's testimony in Docket 1517 is deficient in three general areas. First, his concept of how the Texas PUC sets the rate of return is faulty; second, the data employed in his examples are questionable; and finally, his methodology contains a calculation error and omits several key variables from the analysis. Correcting these deficiencies produces a substantially different conclusion from that reached by Ewert. An expanded look at each of these three areas of criticism follows.

Rate of Return Methodology

Ewert appears to believe that the Texas Commission increases the authorized return on equity to meet coverage goals and that this increase in return results in millions of dollars in increased costs to ratepayers. This assumption is mistaken. The methods employed by the Commission staff and accepted by the Commission do not work as Ewert suggests. Instead, the staff recommends a Return on Equity (ROE) only on the basis of current market conditions; the ROE recommended for the triple-A companies is lower in each case than for other utilities. The PUC does allow some construction work in progress (CWIP) in rate base to improve earnings quality and avoid AFUDC compounding (and has shown this practice to result in lower ratepayer costs). The CWIP/financial integrity decision, however, is completely independent of the recommended return on equity computation. Ewert carefully builds a scenario that is not used at the PUC (increasing ROE to maintain coverage) and then attacks this "strawman" as if it were Commission policy. Such a misdirected attack, by itself, might have been grounds for the Commission's lending little credibility to his testimony. However, there are other technical shortcomings in his analysis that further detract from its effectiveness.

Data

In the text of his study, Ewert references testimony by Mr. Mark D. Luftig on behalf of Texas Power & Light, stating that the desired coverage ratio for a triple-A bond rating is 4.0 times.[1] Ewert then references Standard and Poor's

Corporation to obtain a desired coverage of 3.0 times for a double-A rating.[2] Ewert concludes: "This means the difference in coverage ratios is 1.0 times between triple-A and double-A," (page 34, lines 7-8).

Closer review of these sources points out another shortfall in the analysis performed by Dr. Ewert. In his direct prefiled testimony in Docket No. 1517, (page 24, lines 5-7), Mr. Luftig discusses coverages that include allowances for funds used during construction (AFUDC). The 3.0 times coverage discussed by Standard and Poor's, however, excludes AFUDC. Thus, Ewert is comparing "apples and oranges" by using a triple-A coverage that includes AFUDC (4.0 times) and a double-A coverage that excludes AFUDC (3.0 times). To correct this error, Mr. Luftig's triple-A coverage should be lowered to 3.5 times to exclude AFUDC, or the Standard and Poor's double-A coverage should be raised to 3.5 times to include AFUDC. The net result is a correct difference in coverage ratios between triple-A and double-A bond ratings of .5 times rather than the 1.0 time used by Ewert (3.5 – 3.0 = .5 or 4.0 – 3.5 = .5). This correction cuts in half the additional revenue that Ewert says is necessary to support a triple-A rating.

Changes in capital market conditions also undermine the current value of Ewert's analysis. In his study, Ewert uses an average interest rate differential between triple-A and double-A bonds of about 0.196%, or 19.6 basis points. He notes that the maximum observed spread was 69 basis points in 1974. Updated information in Table B-1 shows that more recent interest rate spreads between AAA and AA bonds have averaged about 28 basis points, with a high in April, 1980 of 75 basis points. More importantly, since 1979 when the Federal Reserve Board changed its policy to controlling the money supply directly rather than controlling

TABLE B-1

INTEREST RATE YIELD SPREADS BETWEEN BONDS OF VARIOUS RATING CLASSIFICATIONS MEASURED IN HUNDREDTHS OF A PERCENT

(basis points)

	AAA-AA	Aa-A	A-Baa
1972[a]	8	13	28
1973	7	19	31
1974	26	52	89
1975	34	82	169
1976	23	35	82
1977	16	21	36
1978	15	24	39
1979	28	36	58
1980	54	57	95
1981[b]	66	65	65
$\bar{x}$	27.7	40.4	69.2
Monthly High	75	100	280
Monthly Low	5	5	17

[a] Source: Information for the years 1972 thru 1980 was obtained from Salomon Brothers - An Analytical Record of Yields and Yield Spreads.

[b] Source: 1981 information from Moody's Bond Record, June 1982.

interest rates, the average differential has been over 50 basis points for AAA vs. AA, with average spreads between the A and BBB ratings approaching 100 basis points. Using these more recent interest rate spreads indicates larger interest cost savings to ratepayers than those employed by Ewert in his 1978 analysis.

Methodology

In his numerical cost/benefit analysis, Ewert makes three important errors in calculations. First, he understates the coverage requirement associated with his double-A bond rating. He fails to recognize that the extra interest resulting from a lower rating (AA vs. AAA) must also be provided 3.0 times coverage. For instance, in Exhibit DCE-1 of Ewert's testimony, page 14, the revenue savings resulting from a triple-A rating should have been $17,352,000, instead of the stated $5,784,000. This $12 million mistake occurs because Ewert's example fails to provide 3.0 times coverage for the $5,784,000 of extra interest that would have been required if the company had been rated AA.

The second and most important shortcoming in Ewert's analysis is his failure to recognize that the greater risk associated with a lower bond rating would not only increase the cost of debt but would increase the cost of equity and preferred capital as well. Ewert effectively omitted additional costs on over half the company's capital. (Common and preferred stock were 51.68% of TP&L's capital in Docket 1517.) A complete analysis must look at costs of capital from all sources rather than just from one source, debt. Even in Ewert's framework, inclusion of the entire capital structure, rather than just debt, more than doubles his stated ratepayer benefits from a AAA rating.

Finally, Ewert errs by ignoring capital structure changes. In many cases, a lower bond rating is associated with both higher capital costs and differences in the debt and equity components of a company's capitalization. As the defects noted above indicate, one cannot examine a single factor in a vacuum. In fact, on a theoretical basis, if a lower bond rating is chosen and capital costs increase, the percentage of higher priced equity capital will decrease to satisfy a given coverage constraint.

The example developed below incorporates all of the previously mentioned adjustments necessary to correct the deficiencies in Ewert's analysis. The framework of the example is similar to that used by Ewert. In reality, it should be noted that Dr. Ewert's coverage calculations bear almost no relationship to actual coverages as calculated by the rating agencies. Ewert's approach consists of a backward looking rerun of the test year and assumes that modified test year rates actually produce earnings and taxes in the amounts employed in his examples. For the sake of comparison, however, calculations comparable to his are employed in the example that follows.

In Exhibit DCE-1 of his testimony, page 11, Dr. Ewert shows that Texas Power & Light had a total capitalization of approximately $1,750,000,000. Given a debt cost of 7.6%, preferred stock cost of 7.4%, a 13.1% preferred stock ratio, and a 12.25% equity cost, the Company would utilize a capital structure of about 49.1%

debt, 13.1% preferred and 37.8% equity to reach a target coverage ratio of 4.0 times (including AFUDC). This capital structure is in line with that actually observed and, assuming a tax rate of 50%, would produce a revenue requirement of approximately $261,300,000.

(000's)

Source of Capital	Amount	% of Capital		% Cost		Capital Cost		Tax* Factor		Capital Cost Including Taxes
Debt	$ 859,250	(49.1%)	x	7.60%	=	$65,303	x	1.0	=	$ 65,303
Preferred	229,250	(13.1%)	x	7.40%	=	16,965	x	2.0	=	33,929
Equity	661,500	(37.8%)	x	12.25%	=	81,034	x	2.0	=	162,068
Total	$1,750,000									$261,300

* The tax factor is $\frac{1}{1\text{-tax rate}}$. A 50 percent tax rate (2.0 tax factor) is assumed here to be consistent with Ewert's analysis. The present 46 percent actual corporate tax rate produces a tax factor of 1.85.

Now if we assume the Company were rated double-A instead of triple-A, the target coverage ratio (including AFUDC) would become 3.5 times, and the capital costs, due to additional risk, would increase to 8.1% for debt, 7.9% for preferred and 12.75% for equity (adding .50% to each source). To satisfy the 3.5 times coverage constraint, the capital structure would move to 53.0% debt and 33.9% equity, with the preferred percentage assumed constant at 13.1%. The capital structure changes in this example are a mechanical result of the arithmetic. Within Ewert's framework a 3.5 times coverage and increases in capital costs of 50 basis points require the capital structure percentages as illustrated in the example. In reality a reduction in the equity percentage associated with a lower bond rating is not an unexpected phenomenon, and would produce a revenue requirement of $262,629,000 as shown in the example below.

(000's)

Source of Capital	Amount	% of Capital		% Cost		Capital Cost		Tax Factor		Capital Cost Including Taxes
Debt	$ 927,500	(53.0%)	x	8.10%	=	$75,128	x	1.0	=	$ 75,128
Preferred	229,250	(13.1%)	x	7.90%	=	18,111	x	2.0	=	36,222
Equity	593,250	(33.9%)	x	12.75%	=	75,639	x	2.0	=	151,279
Total	$1,750,000									$262,629

Comparing the two revenue requirements leads to the key point: The stronger financial position of the triple-A company produces a lower overall cost of capital to ratepayers. The capital cost savings from having the higher bond rating, when subtracted from the additional coverage required to produce the higher bond rating, yields a net benefit to ratepayers of $1,329,000. This result, based on more realistic data and assumptions, is exactly opposite to that reached by Ewert. It clearly demonstrates that higher coverage ratios do not necessarily increase costs and may, in fact, actually yield lower costs to consumers.

Footnotes

1. Mark D. Luftig, Testimony for Texas Power and Light Company before the Texas Public Utility Commission, Docket 1517, December 1977.
2. Standard and Poor's Ratings Guide, (McGraw-Hill Book Company), 1979, pp. 50-51.

Appendix III[1]

Reduction in Cost of Debt Capital Resulting from CWIP Inclusion

Summary

This Appendix examines the effects of including CWIP in rate base on the cost of electric utility debt capital. Based on a review of published studies and the results of independent analysis commissioned by EEI, we conclude that there is a clear and material benefit resulting from the inclusion of CWIP in rate base. The analysis described herein shows that the incremental cost of new utility debt (and possibly, preferred stock) would decline by approximately 65 to 90 basis points as a result of including CWIP in rate base without an AFUDC offset.

Discussion

This Appendix is divided into two sections. In the first section we briefly review the financial literature relevant to the issue of risk premiums in order to develop a firm theoretical basis necessary to formulating a reduced form equation amenable to empirical analysis. In the second section we report on the results of an empirical analysis commissioned by EEI and the resultant estimates of the effect of including CWIP in rate base on new debt capital costs (for both the companies included in the sample and the industry as a whole). The scope of this study was necessarily limited by the time constraints imposed in this proceeding. Nevertheless, the results of our analysis are consistent with previously published studies and support the direction and general order of magnitude of the benefits that accrue under a policy of full CWIP inclusion in rate base.

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[1] The results outlined in this Appendix are based upon work performed by Dr. Jerome Bass of Cornell University and Lessly Goudarzi of NPS Energy Management, Inc.

I. Previous Theoretical and Empirical Work.

The basis theory of risk premiums on financial securities was stated by J. R. McCullough, who wrote:

> There are comparatively few species of security to be obtained in which there is no risk, either as to the repayment of the loans themselves, or the regular payment of the interest. . . . Other things being equal, the rate of interest must of course vary according to the supposed risk incurred by the lender of either not recovering payment at all, or not receiving it at the stipulated term. No person of sound mind would lend on the personal security of an individual of doubtful character and solvency, and on mortgage over a valuable estate, at the same rate of interest. Wherever there is risk, it must be compensated to the lender by a higher premium or interest. The Principles of Political Economy: With a Sketch of the Rise and Progress of Science, pp. 508-509 (2nd ed. 1830).

Since that time, there have been numerous essays and studies devoted to explaining the determinants of interest rates. The theories of Fisher [1.] and Macaulay [2.] are the foundations of this area of finance. Hickman's [3.] 1958 study was the first comprehensive empirical examination of the various relationships between bond ratings, default experience, promised yields, size of issue and issues, lien position, and coverage ratios.

A major study devoted explicitly to corporate risk premiums was published by Fisher [4.] in 1959. In that study, *Fisher systematically identified the four principal characteristics of the firm and its income stream that were the logical factors to explain the observed differences between the yields to maturity on various corporate bonds and yields on similar maturity government (default-free or risk-free) bonds*.

The four factors he rationalized were:

(1) earnings variability,
(2) period of solvency,
(3) equity-debt ratio, and
(4) marketability of the company's debt instruments.

He determined that this "model" explained almost 75 percent of the observed variability in corporate bond risk premiums ($R^2 = .75$) and that the parameter estimates (*i.e.*, regression coefficient) were *extremely stable over a number of* years, representing varied economic and capital market conditions. Table 1 summarizes his regression results.

More recently, a number of studies have focused on the factors that explain utility ratings. Since there is an established relationship between bond ratings and interest rates, these studies are indirectly examining risk premiums. The companies that provide rating services have become quite explicit in attempting to explain the factors they examine, and these explanations have been most helpful in postulating different categories of financial measures to be used in empirical work. (For example, Standard and Poor's Overview [5.] states, "our purpose in preparing this document is to provide an overview of Standard and Poor's corporate bond rating process, including the fundamental factors of evaluation"). Thus, while bond ratings include subjective considerations, rating agencies are becoming increasingly rigorous in defining the factors used to establish comparative rating categories.

A number of studies have attempted to identify those measures that best explain bond ratings and predict corporate solvency. These include works by Ang and Patel [6.], Altman [7.], Horrigan [8.], Johnson [9.], Katz [10.], Melicher et al. [11.], Pogue and Soldofsky [12.], Sherwood [13.], and West [14.].

In addition to these, two other studies are particularly relevant to our effort at linking earnings to risk premiums.

The first, a 1973 study by Pinches and Mingo (P&M) [15.], is the landmark study in this area. P&M began by choosing 35 financial variables that could potentially be used in rating industrial bonds. They then used the statistical technique of factor analysis to identify seven major factor patterns and chose the financial variable most highly correlated with each factor to be included in a discriminate function used to predict bond ratings. The final model chosen included five of the seven variables selected in the first stage of their analysis. To validate their initial model results, they subsequently predicted the bond rating for a holdout sample of firms with a high degree of success.

A more recent study by Altman and Katz (A&K) [16.] focused on electric utility bond ratings. Similar to the work of Pinches and Mingo, A&K hypothesized several characteristics and selected a number of financial measures intended to reflect each characteristic. They subsequently employed discriminate analysis to find the set of measures with the best explanatory power. They also validated their results, predicting the ratings of a holdout sample with a high degree of success. Unfortunately, the A&K study uses data for 1969 through 1971, a time of relative financial health for electric utilities. Further complicating efforts to extrapolate results is the failure of their analysis to focus explicitly on two of the key financial measures which have increased in importance since the time of their work--internal cash flow and quality of earnings.

While this empirical work was being undertaken, a better theoretical understanding of the factors that determine debt capacity and the risk of default was also being developed. Most notable are studies by Modigliani and Miller [18.], Donaldson [19.], and Bierman and Hass [17.]. Finally, the development of modern portfolio theory by Markowitz [20.] and the Capital Asset Pricing Model (CAPM) by Sharpe [21.] and Litner [22.], followed by innumerable theoretical extensions and empirical studies, have all left a rich understanding of investor behavior and capital market relationships upon which to draw.

Brigham [23.] correctly notes that while a number of researchers have attempted to explicitly determine how such factors as AFUDC affect bond ratings and the cost of debt capital, they have met with only limited success. He attributes their limited success to the very nature of bond ratings, which are based only in part on the type of quantitative data that is readily susceptible to regression studies. Based on his discussions with investment bankers and rating agency analysts, Brigham expresses confidence that CWIP does have a material bearing on reducing debt costs. As an approximation he presents the case of a "typical" company with an earned return on equity of about 12 percent and a debt ratio of about 37 percent. For such a company, a 10 percent change in the expected long-run average percentage of AFUDC (of net income) would result in a change of about one rating in a company's bonds, and, consequently, the following premiums in the cost of a new debt:

		1979 Averages	
AFUDC Net Income	Bond Rating	Interest Rate	Premium Aaa/AAA
0-10%	Aaa/AAA	9.64%	-0-
10-20%	Aa/AA	9.97%	0.33%
20-30%	A/A	10.17%	0.53%
30-40%	Baa/BBB	10.69%	1.05%

With risk premiums on differently rated bonds varying from year to year, debt cost differentials have increased over the past two years and are considerably higher in 1980-81 than they were when the Brigham work was performed in 1979.

If a company were allowed to include CWIP in rate base, and if it thereby lowered its AFUDC ratio from 40 percent to zero over time, its bond rating would gradually improve, its incremental cost of new debt would decline from what it otherwise would have been, and its embedded cost of debt would likewise decline (over time). However, whereas the beneficial effects of such a change on the cost of equity could be reflected immediately in terms of lower revenue requirements, the debt-related benefits of CWIP would evolve more slowly (i.e., as embedded debt is retired and new debt issued).

II. Initial Results of Current Efforts to Estimate Effects on Risk Premiums of CWIP Inclusion.

From this base of theoretical and empirical literature we have derived our fundamental model and analytical approach. Like Fisher, we employ a multiplicative model for explaining risk premiums; this allows for the various factors to interact rather than simply be additive. The predictor variables we have chosen are logical candidates from the theoretical and empirical work that we have outlined above (rather than being determined through a stepwise regression technique that often results in models with high correlation coefficients but limited intuitive or logical basis in theory). Finally, although we are confident that the predictor variables we have chosen are both reasonable and theoretically consistent and that the empirical relationships we develop are not "spurious," we employ validation methodology explicitly (i.e., a holdout sample) to ensure that the relationship has predictive capability beyond the sample space upon which it was founded.

The hypothesis of our model is that the magnitude of risk premiums imposed by investors on an electric utility's bonds are a function of: (1) the risk that the utility will default on its bonds and (2) the adequacy and quality of earnings of the utility. The "risk of default" can be estimated as a function of three variables: the debt to equity ratios in the firm's capital structure (D/E), the variablity (V) of the firm's earnings before interest and taxes (EBIT), and the interest coverage ratio (CR).[2/] The quality of earnings can be estimated as a function of the firm's return on common equity (ROCEW), the ratio of construction expenditures to free cash flow (CE/CF), and a direct quality of earnings measure of the ratio of EBIT without AFUDC to EBIT with AFUDC (EBITWO/EBITW).[3/]

[2/] The debt/equity ratio and the variability measure were drawn from the prior work of Fisher; the times interest earned-coverage ratio is a frequently cited measure of the extent to which the firm's earnings can support debt obligations.

[3/] Free cash flow reflects cash available after payments of common dividends.

Finally, the dependent and the independent variables can be estimated as a log-linear function.

Consistent with Fisher, risk premiums were defined as the difference between the bond's yield to maturity and the corresponding "risk-free" rate of interest (measured in this instance by Federal bonds of equal maturity).

The three risk-of-default measures that were used in an effort to estimate risk premium were: (1) the variability of EBIT (V); (2) the degree to which the firm relies on financial leverage (i.e., D/E ratio); and (3) the extent to which the utility can sustain lower earnings and still meet its debt service obligation (i.e., CR). The concept of a variability of earnings measure was adopted from Fisher's model. However, as a matter of both data availability and analytic convenience, earnings variability was measured by reported earnings before interest and taxes (and before any extraordinary adjustments to earnings) inclusive of AFUDC.

Also consistent in concept with the Fisher model, the utility's use of financial leverage and its potential impact on risk of default was included in our model. Our estimate of this variable was the utility's debt/equity ratio. This approach varies from Fisher's variable in that the variable used in our analysis was measured in terms of the book value of equity as opposed to Fisher's market value measure.

Our final measure of risk-of-default was the utility's coverage ratio. This variable was selected on two grounds. First, it is the financial measure most frequently cited by utility bond rating agencies as a primary measure of a "company's ability to carry its present debt load." Secondly, as Fisher observed, "if investor's are rational, the risk premium on any bond will depend on the probability that the firm's earnings will be too small to permit it to pay its debt." The coverage ratio is the most widely used measure of the firm's ability to sustain reduced earnings and still meet its debt service obligations.

In addition to the three measures of risk-of-default identified above, the quality-of-earnings variable was added because of the unique circumstance of regulated utilities with regards to substantial amounts of non-cash (AFUDC) earnings. The specific measure of the quality of earnings was defined to be the ratio of EBIT exclusive of AFUDC to EBIT inclusive of AFUDC. This represents a direct measure of quality of earnings that was consistent with our multiplicative model and would allow our subsequent analyses of the model under alternative CWIP rate treatment assumptions.

Finally, the degree to which the utility can generate cash flow that is freely available for construction expenditures was considered to be an important variable in explaining risk premiums. A relatively greater amount of free cash flow would provide the utility with greater flexibility in arranging external financing consistent with its capital structure objectives and debt service requirements.

The model can be summarized by assuming the following:

Eq. 1: $R_p = A_0 X_1^{a_1} X_2^{a_2} X_3^{a_3} X_4^{a_4} X_5^{a_5} X_6^{a_6}$

which can be transformed to the following logarithmic form:

Eq. 2: $r_p = a_0 + a_1 x_1 + a_2 x_2 + a_3 x_3 + a_4 x_4 + a_5 x_5 + a_6 x_6$

where $a_o = \log A_o$

$x_1 = \log X_1$, etc.

which is readily analyzed by the method of least squares.

The variables are logs of the following:

r_p = risk premiums or utility debt

x_1 = D/E = debt to equity ratio

x_2 = V = coefficient of variation of EBIT

x_3 = CR = coverage ratio

x_4 = ROCEW = return on common equity, AFUDC inclusive

x_5 = EBITWO/EBITW

x_6 = CE/CF

The model described in Eq. 2 was analyzed for 171 observations representing a cross-section of utilities for the years 1978 to 1981. In each case the data representing the independent variables was lagged one year behind that of the dependent risk premium. This was done to reflect the lag in information available to the investor at the time wherein competing investment opportunities were evaluated.

Before estimating the model, a preliminary analysis of normalized overall risk premiums and levels of the risk-free rate suggested that it was essential to include the risk-free rate among the independent variables since risk premiums appeared to be proportional to the riskless rate, rather than additive. A seventh independent variable was, therefore, added to equation 2:

Eq. 2A: $r_p = a_0+a_1x_1+a_2x_2+a_3x_3+a_4x_4+a_5x_5+a_6x_6+a_7x_7$
where x_7 = log of "risk-free" rate.

Table 2 summarizes the results of this analysis.

A separate equation was estimated for each year and across all years. Only two variables consistently reflected correct signs in all five cases examined: the coverage ratio and risk free measure. The coefficient estimates for these variables were determined to be statistically significant at the .01 level (four times and three times, respectively). This was due to the significant colinearity across the several independent variables.

An investigation of the detailed results outlined above suggested that a considerably simpler model could be estimated with greater explanatory power. In this regard, we constructed two simple alternative hypotheses that postulated that risk premiums are a function of the risk of default and the earnings quality of the utility. One alternative model suggests that risk of default is best reflected in the degree of financial leverage and quality of earnings is best reflected in the cash component of earnings. The second alternative model suggests that a single factor, the interest coverage ratio, can adequately reflect both risk of default and earnings quality. (The earnings quality characteristic of coverage ratios is captured by estimating the model with coverage ratios including AFUDC and exclusive of AFUDC).

Due to the substantially simplified nature of the revised models, a holdout sample was isolated from the universe of observations for use in model validation. Table 3 summarizes the results of the revised model estimating attempt. In each instance the signs of the coefficients were exactly as hypothesized and the results were statistically significant at the 0.01 level.

As a test of the validity of the revised models, the model results were used to predict the risk premiums on the holdout sample. As Table 3 indicates, the revised models were able to provide consistently good predictions of risk premiums; the R^2 on the holdout sample exceeded 0.73 in all cases examined.

In order to predict the impact of CWIP treatment on risk premiums, the entire data set, including the holdout sample, was used to reestimate the model coefficents. The results of this estimation are presented in Table 4. Our estimates of the effect including CWIP in the rate base on risk premiums were based on the model results utilizing the entire data set.

The resulting model (equation 2) can be used to directly estimate the effect on utility debt risk premiums of including CWIP in the rate base. Assuming an industry average debt ratio of approximately 52.5 percent (i.e., 1.105 D/E), current risk-free rate (for government bonds) of 14 percent and an industry average of 0.86 EBITWO/EBITW, this model yields a 67 basis point risk premium reduction if EBITWO/EBITW were 1.0 versus the current average 0.86 (which would be the case if CWIP were included in the rate base earning a current cash return).

Additionally, it should be noted that in 1980 some 48 percent of investor-owned electric utilities had EBITWO/EBITW ratios less than the 0.86 industry average. For those utilities in greatest need of financial assistance, one should expect even greater benefits in terms of risk premium reductions. For example, 25 percent of investor-owned utilities had EBITWO/EBITW ratios below 0.80 and thus might expect risk premium reductions in excess of 110 basis points. (Figure 1 provides a graphic illustration of the number of utilities with various levels of EBITWO/EBITW).

Before using the resulting equations of models 3A and 3B to estimate risk premium differentials, a review of the estimated coefficients is useful. As one would expect, the model estimates of risk premiums including AFUDC are consistently higher than for those where AFUDC is excluded (for any given coverage ratio). This merely highlights the fact that investors are aware of--and discount--the "implied" risk of default based on the limited benefits of non-cash, AFUDC earnings. Additionally, the difference between the two coverage ratios (with and without AFUDC) remains very stable at approximately .45-.52 over the 3.5-6.0 percent risk premium range. Figure 2 provides a graphic illustration of the two coverage ratio based models.

Table 4 provides an illustration of the typical effect of AFUDC on coverage ratios. Assuming coverage ratios (excluding AFUDC) could be improved from their current levels of approximately 2.50 to a minimally acceptable level of 3.50 (which, based on examination of Table 2, is not an unreasonable target) risk premiums could be expected to decline 88 basis points. See Figure 2.

In summary, this analysis suggests that utility risk premiums and consequently the incremental cost of new long-term debt could be reduced by approximately 65 to 90 basis points if full CWIP were allowed in the rate base without an AFUDC offset.

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TABLE 1

REGRESSION EQUATIONS FOR ESTIMATING LOGARITHM OF AVERAGE RISK PREMIUM OF A FIRM'S BONDS AS A LINEAR FUNCTION OF LOGARITHMS OF EARNINGS VARIABILITY, PERIOD OF SOLVENCY, EQUITY/DEBT RATIO, AND BONDS OUTSTANDING

(Fisher Model)

(Hypothesis that $X_1 = a_o + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4$)

Equation	Date	No. of Observations	Degrees of Freedom	R^2	ao	a_1 (s1)	a_2 (s2)	a_3 (s3)	a_4 (s4)
1....	All	366	357	0.811*	+	+0.262 (.032)	-0.223 (.033)	-0.469 (.029)	-0.290 (.019)
2....	All	366	361	.750	0.987	+ .307 (.032)	- .253 (.036)	- .537 (.031)	- .275 (.021)
3....	1927	71	66	.756	0.874	+ .233 (.048)	- .269 (.062)	- .404 (.039)	- .169 (.031)
4....	1932	45	40	.726	1.014	+ .248 (.128)	- .067 (.114)	- .531 (.092)	- .286 (.071)
5....	1937	89	84	.731	0.949	+ .286 (.051)	- .254 (.061)	- .491 (.060)	- .271 (.038)
6....	1949	73	68	.786	0.711	+ .228 (.100)	- .124 (.076)	- .426 (.084)	- .329 (.046)
7....	1953	88	83	0.773	1.012	+ .228 (0.091)	- .300 (0.089)	- .474 (0.085)	- .363 (0.043)

* 0.741 after the effects of differences in a_o are eliminated.

+ 1927: 0.966; 1932: 1.235; 1937: 0.918; 1949: 0.847; 1953: 0.829.

Source: Fisher, L., Journal of Political Economy, 1959.

TABLE 2

REGRESSION EQUATIONS FOR ESTIMATING LOGARITHM UTILITY BOND RISK PREMIUMS

Model	Year	No. of Observations		X1 D/E	X2 V	X3 CRW	X4 ROCEW	X5 CE/ CF	X6 RF	X7 EBITWO/ EBITW	R^2
1A	1978	63	Coef.*	-0.109	-0.119	-1.463	0.485	-0.050	0.425	0.229	0.459
			t	-0.272	-1.209	-4.561	1.655	-0.953	0.239	0.340	
1B	1979	48	Coef.	-0.018	0.170	-1.087	0.232	-0.144	5.268	1.737	0.750
			t	-0.069	-1.311	-2.831	0.785	-1.483	8.037	2.460	
1C	1980	44	Coef.	0.084	0.034	-1.149	-0.187	0.007	1.911	0.744	0.680
			t	0.207	0.221	-2.850	-0.762	0.116	4.653	1.596	
1D	1981	16	Coef.	0.044	-0.201	-0.995	0.696	0.144	0.587	0.606	0.851
			t	0.228	-1.080	-3.907	2.798	1.448	0.903	1.184	
1E	ALL	170	Coef.	-0.007	0.060	-1.201	0.375	-0.054	2.954	-0.151	0.811
			t	-0.036	0.877	-5.952	2.410	-1.462	19.622	-0.422	

*Coefficient

TABLE 3

Regression Equations for Estimating Logarithms of Utility Bond Risk Premiums (Exclusive of Holdout Sample)

Model		D/E	CR_W	EBITWO EBITW	CR_{W_O}	R_p	R^2
2.1	Coefficient	0.693	-	-1.059	-	3.2505	0.75
	t	4.084	-	-4.390	-	19.009	
						HOLDOUT R^2	0.73
3.A.1	Coefficient	-	-0.904	-	-		
	t	-	-10.177	-		3.094	0.83
					-	21.218	
						HOLDOUT R^2	0.82
3.B.1	Coefficient	-	-	-	-0.687	3.068	0.80
	t	-	-	-	-8.894	19.708	
						HOLDOUT R^2	0.77

TABLE 4

COVERAGE RATIO CALCULATION USING COST OF CAPITAL MODEL

1. Assuming 100% Capital in Rate Base.

Cost of Debt (overall)	0.08	Fraction Debt	0.50
Cost of Preferred Equity	0.08	Fraction Preferred Equity	0.15
Cost of Common Equity	0.16	Fraction Common Equity	0.35

Effective tax rate of 35 percent

Cost of Capital (pretax) = 14.46 percent

Coverage Ratio = 14.46 ÷ 4.0 = 3.61x

2. Assuming 40 percent CWIP excluded from Rate Base and debt/equity costs the same for CWIP and Rate Base.

Interest Cost: 0.08 * .50 * .60 + 0.08 * .50 * .40 = 0.040

Equity Cash Earnings: 0.08 * .15 * .60 + 0.16 * .35 * .60 = 0.063

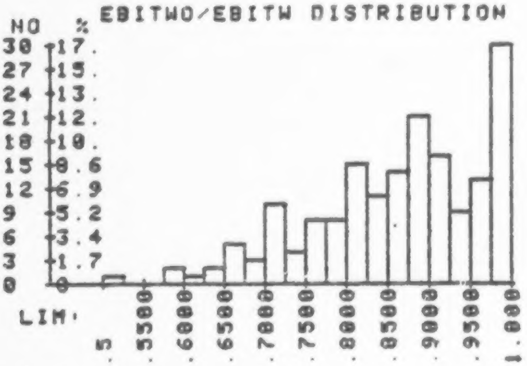
a. Coverage Ratio
(Excluding AFUDC earnings) = (0.040+0.063) ÷ 0.04 = 2.57x

b. Coverage Ratio
(Including AFUDC earnings) = 3.25x

c. Coverage Ratio w/CWIP in Rate Base = 3.61 (as above)

Figure 1

1980 Utility Earnings Quality Measure of EBIT
Exclusive of AFUDC to EBIT with AFUDC — Basic Industry Statistics



CELL STATISTICS

CELL#	LOWER LIMIT	NUMBER OF OBS.	%RELATIVE FREQUENCY
1	.50	1	.58
4	.58	2	1.16
5	.60	1	.58
6	.63	2	1.16
7	.65	5	2.89
8	.68	3	1.73
9	.70	10	5.78
10	.73	4	2.31
11	.75	8	4.62
12	.78	8	4.62
13	.80	15	6.67
14	.83	11	6.36
15	.85	14	8.09
16	.88	21	12.14
17	.90	16	9.25
18	.93	9	5.20
19	.95	13	7.51
20	.98	30	17.34

Mean	Std. Dev.
.8607	.1066
Coef of Skewness	**Coef of Kurtosis**
-.7089	.0068
Maximum	**Minimum**
1.0000	.5010
Range	**Midrange**
.4990	.7505
Median	
8820	
25-th %	**75-th %**
.8000	.9460

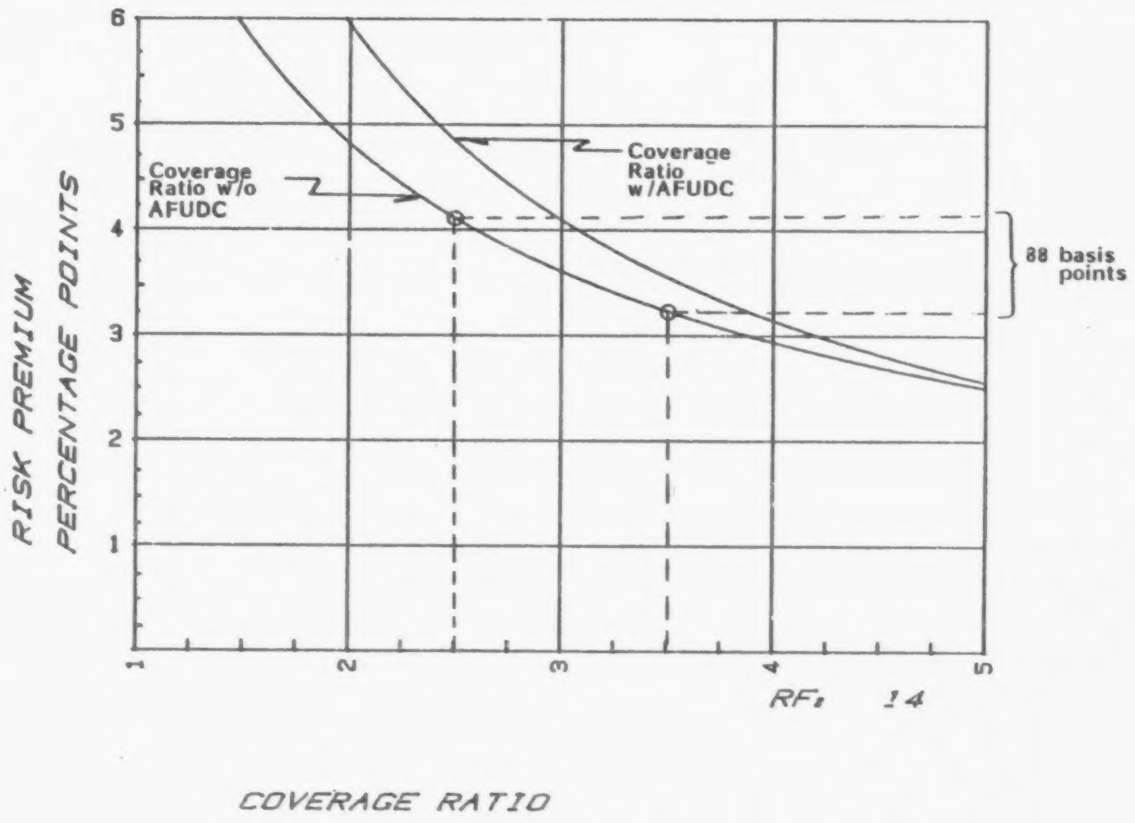

RISK PREMIUM
PERCENTAGE POINTS
6
5
4
3
2
1
Coverage Ratio w/o AFUDC
Coverage Ratio w/AFUDC
88 basis points
1
2
3
4
5
RF₂ 14
COVERAGE RATIO

FIGURE - 2

9. To what extent do other capital intensive industries, such as steel and automobiles, finance new production capacity by charging current customers the carrying charges on new plants?

Private industries, such as steel and automotive, make decisions regarding capacity expansion in anticipation of timely recovery of their investment through increased cash earnings. This may occur through an increase in their price of current product--if market conditions allow--or sometimes in the prices of other goods or services. In any case, competitive firms will seek to recover such costs (whenever possible) through increases in current revenues. This is the effective equivalent of CWIP.

But sometimes competitive market conditions may preclude price increases (on current production) to allow sufficient revenues to finance expansion. In these cases, the competitive company has the option of (1) seeking external sources of financing where such capital acquisition is both feasible and does not impose financial burdens on the company or its investors or; (2) deferring or cancelling the capacity expansion decisions if adverse financial consequences are anticipated, even though this may involve a short-term loss of market share. (It is assumed that projected increases in demand prompted the initial expansion decision).

The regulated electric utility rarely has such flexibility in its financing decisions. External financing at costs in excess of earned rates of return imposes severe financial penalties on utility investors. Nonetheless, the utility is forced by its "obligation to serve" to finance needed construction in order to respond to customers' long-term service requirements no matter how adverse the consequences to investors. Furthermore, the time frame for recovery of such costs through the AFUDC mechanism is longer than in any other major industrial sector by virtue of the lengthy construction cycle.

In summary, only a current cash return on construction expenditures will allow the regulated utility to operate in a mode more consistent with competitive market conditions and eliminate the growing bias against capital-intensive and least-cost projects as a factor in utility decisionmaking.

Finally, competitive firms have no "obligation to serve." Thus they can decide whether or not to expand production capacity. Typically they will not decide to do so unless they project additional sales sufficient for recovery of investment over a relatively few years. Relatively low dividend payouts enable these firms to finance a much larger proportion of their costs of capacity expansion out of current earnings. Current earnings will tend to be high when there is a need for capacity expansion. Thus such firms finance a much smaller proportion of construction by raising new capital in the open market.

10. How do federal, municipal, and cooperative utilities account for carrying charges on their construction investments in rates charged to current customers?

Practices of these utilities vary greatly. The term "CWIP," which originates in FERC's Uniform System of Accounts, generally is not used. However, many non-investor-owned utilities do recover from their ratepayers, on a current basis, the financing charges on projects under construction. Functionally, there is no difference between this practice and earning a cash return on CWIP. (It should be remembered that a non-investor-owned utility's capital structure includes only debt; that of an investor-owned utility, both debt and equity. The principle, however, is the same - the ratepayer pays rates that include financing costs on construction work in progress.)

Non-investor-owned utilities which have been identified as recovering all or some of their financing charges on a current basis include:

- ° Tennessee Valley Authority,
- ° San Antonio Public Service Board,
- ° Seattle City Light Department,
- ° Salt River Project Agricultural Improvement and Power District,
- ° Sacramento Municipal Utility District,
- ° Los Angeles Department of Water & Power,
- ° Nebraska Public Power System, and
- ° Bonneville Power Administration

For the Committee's information, a detailed study is attached of the construction financing practices of non-investor-owned utilities, prepared by the law firm of Swidler, Berlin & Strelow.

SWIDLER, BERLIN & STRELOW
CHARTERED
1000 THOMAS JEFFERSON STREET, N.W.
IN GEORGETOWN
WASHINGTON, D.C. 20007
(202) 342-8500

ATTORNEY'S WORK PRODUCT
PRIVLEGED & CONFDENTIAL

May 9, 1983

MEMORANDUM

Re: Construction-Work-in-Progress and the Rates of Non-Investor-Owned Utilities

Introduction

In the hearings held by the FERC on the proposed rulemaking addressing the treatment of CWIP in ratemaking, the Commissioners showed keen interest in the question of whether municipal electric utilities (many of which are opposing the position of the investor-owned utilities in the proceeding) charge rates intended to raise cash to cover, on a current basis, the carrying charges of funds raised to finance new construction. If municipal utilities do generally charge such rates, they are effectively including CWIP in rate base.[1]

We have studied ratemaking practices of non-investor-owned utilities in as much depth as is practical, given the constraints of time and resources. We have carefully reviewed the "Official

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[1] It is somewhat artificial to apply the concept of "rate base" to municipal electric utilities, since their rates are usually unregulated, and "rate base" is a regulatory concept used in ratemaking. The normal practice of municipal electric utilities (to the extent that there is a pattern) is to base rates on certain, identified costs and financial commitments.

Statements" for bond issues of various municipal electric utilities (which are the equivalent of "prospectuses" for bond issues of investor-owned utilities); have spoken with two investment bankers who have substantial experience in the area of municipal bond issues; and have discussed the issue with accountants who work on the accounts of municipal electric utilities (either through an outside "Big 8" auditor or directly for a municipal electric utility).

The subject is complex, and, for several reasons, it is difficult to reach firm conclusions. First, reviewing rate covenants applicable to municipal electric utilities (or the purchased power agreements of the municipal participants in a project) will rarely (if ever) provide a clear conclusion as to whether, in practice, a municipal utility is covering payment of the carrying charges of CWIP in its electric rates. The objective of a rate covenant or the rate clause of a purchased power agreement is to ensure that the utility or project will raise sufficient funds to pay operating expenses *and* debt service (principal and interest). The fact, however, that a municipal utility may have appeared to agree to set rates (or a participant in a powerplant project may have agreed to pay amounts) adequate to cover operating expenses and debt service *does not necessarily mean* that rates must recover, on a current basis, interest during construction. This conclusion results from the additional fact that the rate clause may also allow funds not generated by rates to cover expenses and debt interest, and the rate clause may not have any effect until completion of the project (examples will be given below).

Second, "Official Statements" vary in the detail provided on the practices of the borrower, and may not state whether some of the proceeds of a bond issue are being set aside to meet future interest payments on the issue. For example, the "Official Statement" may only state that some large proportion of the proceeds is designated for a "Construction Fund," without indicating whether interest may be paid from such fund.

Third, the appearance of an entry for "allowance for funds used during construction" on the operating statement of a municipal electric utility does not necessarily mean that the utility is charging rates lower than the level needed to cover all debt service on a current basis. Although accountants who specialize in the accounts of investor-owned utilities may assume that recovery of interest during construction through current rates must reduce the amount recognized as an allowance for borrowed funds used during construction,[2] to our astonishment an accountant who reviews the books of a municipal electric utility (San Antonio) has rebutted this assumption -- the accountant asserted that the operating statement of San Antonio will show an entry for AFUDC, yet San Antonio will currently recover all debt service through its rates. This result occurs because San Antonio sets its rates at levels sufficient to generate revenues covering operating costs and debt service, but keeps its books just like an investor-owned utility. Thus, San Antonio adds capitalized interest to its entry for CWIP and, when the applicable construction is complete, commences to amortize the capitalized interest through depreciation charges. Unlike the case of an investor-owned utility, this amortization has no effect on rates because depreciation is not a factor in setting the electric rates of San Antonio -- the "rate base" does not determine rates.[3]

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[2] When we put this proposition to Don Kane of Arthur Andersen, he agreed with it. We therefore initially concluded -- erroneously, it now seems clear -- that any municipal utility that issues an operating statement containing an entry for AFUDC on borrowed funds cannot be currently recovering, through its rates, all interest during construction.

Despite the difficulties of investigation described above, certain significant conclusions can be reached.

Summary of Conclusions

1. Entities formed by their utility participants (including municipal utilities) for the purpose of constructing power projects, and that rely on power supply contracts with their utility participants as the basis for raising construction capital, generally cover debt service with borrowed funds until the project goes into service.

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[3] The accountant who gave us this information about San Antonio, Alan Stinson of Deloitte, Haskins & Sells, conceded that there is a good argument that "it serves no purpose to capitalize interest and show AFUDC when the capitalization has no effect on rates."

2. The Tennessee Valley Authority, which, as of the end of fiscal year 1980 (9/30/80), had over $7.7 billion of CWIP on its balance sheet, sets rates that recover, on a current basis, over three-quarters of the interest on funds borrowed to finance CWIP.

3. Although the accountants with whom we spoke emphasized that the ratemaking practices of municipal utilites vary too much for generalization, we have identified one large municipal electric utility -- San Antonio, which is a substantial participant in one large construction project (the South Texas Nuclear Project) and has just announced a plan to construct a large lignite-fired powerplant -- that states that its rates recover all operating costs and debt service on a current basis, and another large municipal electric utility -- the Seattle City Light Department, which showed over $42 million of CWIP on its balance sheet near the close of 1980 -- that has published financial statements indicating that its rates cover all interest on a current basis. Furthermore, although the description of bond issues for major municipal utilities often do not clearly indicate whether interest is being covered by current rates, it is clear from the financial statements that we have reviewed that many of the large municipal electric utilities force ratepayers to help finance construction programs by charging rates that produce a surplus of funds (after payment of operating costs and debt service).

Participation by Municipal Utilities in Large Construction Projects

Many municipal electric utilities participate in entities that contract for the purchase of electric powerplants under construction and/or that finance and build such plants directly. The normal arrangement is for a utility participating in such an entity to execute a contract designed to ensure that the utility is liable for the capital costs of the powerplant in the same proportion as the proportion of electric power from the powerplant that the utility is entitled and committed to receive. These contracts are then used by the entity as a basis for raising debt to finance its construction of the powerplant (or, if the entity is itself only a participant in a powerplant under construction, to finance its capital commitment for the powerplant).

Under such circumstances, the usual course is for the larger entity responsible for raising capital to capitalize interest and to finance interest during construction through bond proceeds and earnings on bond proceeds. In such a case, the municipal utilities participating in the entity are insulated from the carrying charges on CWIP; payments become due to the entity from the participating municipal utilities only upon completion of the powerplant. Both of the investment bankers with whom we spoke -- Robert Noland of the Municipal Financing Division of Lehman Brothers Kuhn Loeb and John F. Thompson of the Municipal Finance Division of Salomon Brothers, Inc. -- stated unhesitatingly that the practice of capitalizing interest during construction and financing it with the proceeds of bond issues is standard for the entities in which municipal utilities participate. This conclusion is confirmed by Fenn Putnam, co-director of public power financing in the Municipal Finance Division of Salomon Brothers. In an article discussing "joint action public power agencies" (entitled "A New Breed of Cat" and published in the TVPPA News), Mr. Putnam noted:

> ... most of these agencies fund all of their interest during construction out of bond proceeds and do not rely upon the current revenues of their utility system members to pay such expenses.

The practices of those agencies for which we have reviewed descriptions of bond issues are described briefly below. You will note that the exception to the general rule stated above is the Washington Public Power Supply System, which, with respect to each of the five nuclear projects in which it has been engaged, established a date after which interest is no longer capitalized and no longer funded through bond proceeds.

Massachusetts Municipal Wholesale Electric Company. In the Official Statement for its 1981 Series B revenue bonds, MMWEC notes that part of the proceeds of the issue will be used to fund interest and repeatedly states its intention to use the proceeds of future bonds to fund additional interest during construction.

Intermountain Power Agency. In the Official Statement for its 1981 Series D revenue bonds, IPA notes that a sufficient amount of proceeds from the bonds will be put into a debt service account to fund interest on the bonds to January 1, 1984, and that IPA intends to fund interest through bond issues until the date of commercial operation of each generating unit to which the respective interest relates.

Kansas Municipal Energy Agency. In its Official Statement for its 1981 Series A bonds, KMEA states that bond proceeds and related investment earnings should cover interest to September 1, 1982, "the estimated completion date of the construction."

Western Minnesota Municipal Power Agency. In its Official Statement for its 1979 Series A revenue bonds, WMMPA states its intent to capitalize interest during construction.

Washington Public Power Supply System. WPPSS had agreements with the participants in its five nuclear projects under which interest would be capitalized only to a date certain for each project, and after which date interest would be billed directly to the participants. When we mentioned this fact to Mr. Noland at Lehman, he was startled because "having an outside date" is an exception to the rule, an exception he attributed to the fact that WPPSS was one of the first agencies to plan such large powerplant projects.

Presumably because of delays, the period between the date on which WPPSS starts to bill interest and the estimated date of completion has become quite significant:

Project	Date ending interest capitalization	Estimated date of completion
No. 1	9/1/80	6/86
No. 2	9/1/77	1/84
No. 3	9/1/82	12/86

Indeed, WPSS provides a table showing the difference in power costs over seven future years as a result of interest being billed out to participants. For example, for the fiscal year ending 6/30/84, the projected cost of electricity from Project No. 2 is 55.8 mills/KWH, but would be 69.7 mills/KWH, or 25% higher, if interest charges after 9/1/77 were not being recovered on a current basis.

Power Authority of the State of New York. PASNY (like TVA) appears to be a hybrid: it is itself a municipal electric utility that sells directly to end-users and, in addition, sells to utilities that re-sell the power to end-users. Its Official Statement for its Series M bonds indicates that PASNY follows the practice of capitalizing interest until completion of a project, and apparently PASNY funds all except an insignificant portion of construction costs, including capitalized interest, through bond issues. PASNY's statement of financial condition on 12/31/80 does show that $119 million of revenues have been allocated over the years to "additions to electric plant" (which totalled $3.2 billion). This figure indicates that PASNY is generating some funding for CWIP directly from revenues and the proportion may be increasing (although still relatively small because $37.5 million of revenues were allocated to "additions to electric plant" from 1980 revenues).

The Tennessee Valley Authority

The Tennessee Valley Authority capitalizes interest during construction, and recognizes an allowance for funds borrowed during construction, only to the extent of the amount of depreciation and other non-cash charges less $20 million, which is the amount of repayment to the U.S. Treasury made each year on the appropriation investment. The remaining interest is charged to ratepayers on a current basis. The apparent logic of this policy is that charges that do not produce any cash outflow but are covered by revenues generated through the electric rates in effect create cash that can be used to cover interest during construction. TVA's financial statements indicate that this accounting treatment is reflected in TVA's rates:

> In accordance with the TVA Board of Directors criteria for establishing wholesale lower rates, the allowance [for borrowed funds used during construction] is applicable only to the construction of major generating facilities and limited to the amount of the sum of depreciation and other current noncash charges less the amount of the repayment of the appropriation investment as prescribed in section 15d of the TVA Act.[4]

Based on this policy, AFUDC in 1980 for TVA amountd to $155 million. This amount was calculated at a rate of interest equal to the interest on the most recent debts issues resulting in proceeds equivalent to the total amount of CWIP for major generating facilities (some $7.7 billion). Using a rough estimate of such an interest rate, we calculate that AFUDC of $155 million represents the capitalization of interest on some $1.7 billion of CWIP. Moreover, Kenneth Gray, head of TVA's

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[4] TVA Annual Report, 1980, Note 2 to the financial statements.

Washington office, has assured us that no portion of TVA's borrowings from the Federal Finance Bank is set aside to cover future interest and that the FFB does not provide funds to service the debt during construction. (Thus, TVA's practice with the FFB contrasts with REA's practice, which is described in RWE's memorandum of December 16).

Based on the above information, we would conclude that TVA includes about $6 billion of its $7.7 billion of CWIP in rate base, or more than 75%. And there is a further wrinkle in TVA's financial statements that indicates to us that TVA's ratepayers are arguably covering a portion of CWIP directly on a current basis. TVA sets rates sufficiently high to realize earnings (after payment of a return on the appropriation investment), which TVA reinvests in its system. These retained earnings amounted to 44%. of AFUDC on borrowed funds in the fiscal year ended 9/30/79, and almost 80% of AFUDC on borrowed funds in the 1980 fiscal year.

The Practices of Individual Municipal Electric Utilities

According to Sam DiGiovanni of Arthur Anderson, it is impossible to generalize on the ratemaking practices of municipal electric utilities because of their variability. Mr. DiGiovanni believes that the most frequent practice is to set rates to cover operating costs and debt service. However, this practice does not mean that CWIP is, in effect, necessarily included in "rate base" because typically, the bond issues issued by municipal utility for financing the construction of a powerplant will cover the financing cost through completion. Moreover, municipal electric utilities often do not consider depreciation charges in setting rates, but focus exclusively on debt service, which complicates any comparison with the ratemaking of investor-owned utilities.

San Antonio, however, is an example of a major municipal electric utility that covers all interest through current revenues. This practice was confirmed by Alan Stinson of the San Antonio office of Deloitte, Haskins & Sells, which is the outside auditor to the San Antonio municipal utility, and Ken Harz, who works in the finance department of the utility. Indeed, Mr. Harz expressed surprise that any utility would have a different practice, and he said that none of the bond proceeds raised by San Antonio was reserved for future interest. The rates of the utility are set to cover operating cost and debt service (repayment of principal thereby substituting for depreciation as a consideration in establishing rates). The amount of CWIP creating carrying charges that must thereby be covered by revenues from electric rates must be substantial, because San Antonio is one of five participants in the South Texas Nuclear Project and is directly responsible for financing its share (this project differs from projects like those of WPPSS, in that the project does not raise its financing directly on the capital markets, but relies on its participants to provide the funds).

Moreover, San Antonio will shortly be spending large amounts on a lignite-fired plant, which will further increase the carrying charges for CWIP reflected in the utility's rates.

A close reading of the financial statements of the Seattle City Light Department indicates that it finances interest during construction through rates (although, as a major participant in the projects of WPPSS, Seattle insulated itself from interest on much of the construction being undertaken for its benefit during the period before WPPSS could begin to exercise its right to charge interest to its participants). Financial statements included in the Official Statement for the 1981 revenue bond issue show no entry for AFUDC and also show debt service on the 1981 bonds commencing immediately. From these facts, it appears that Seattle is covering interest during construction with current revenues. Indeed, the revenues of the Seattle City Light Department have produced net income in each of the last five calendar years, and in one year (1978), the amount was $10.5 million. Earnings retained in the business as of 11/30/80 were $188 million, considerably more than assets exclusive of electric plant. From this fact, we conclude that Seattle has raised some construction financing over the years through its rates.

The apparent policy of Seattle, to set rates that generate net income used to finance construction, is followed by other municipal utilities as well. The Salt River Project Agricultural Improvement and Power District, an agricultural improvement district organized under the laws of Arizona and providing electric service over a large area, had a balance sheet as of 4/30/81 showing $2.2 billion in long-term debt and $471 million in "accumulated net revenues, invested principally in utility plant." Net revenues for the year ended 4/30/81 were $93.5 million; assets exclusive of utility plant and segregate bond funds rose only $4.5 million; and CWIP was $887 million. From these facts, it appears that the Salt River Project uses rates to generate revenues to finance CWIP.

Similarly, the Sacramento Municipal Utility District had substantial net revenue for the year ended 12/31/80, a year when its working capital declined and it spent substantial amounts to make additions to plant and nuclear fuel and had a significant amount of CWIP. "Customers' equity employed in the business" totalled almost as much as long-term debt ($422 million and $510 million respectively), from which we would conclude that a substantial portion of utility plant constructed in the past (original cost $893 million; net of depreciation $709 million) was financed with customers' equity raised by rates. The same conclusion would apply to the Department of Water and Power for the City of Los Angeles, which had retained income in the amount of $946 million "reinvested in the business" as of 6/30/79, and long-term debt in an amount considerably less than the amount of the utility plant (net of depreciation).

It is difficult to obtain information on the rate practices of smaller municipal utilities because they do not generally raise funds through the large underwriting firms in New York and often do not use a "Big 8" accounting firm as an outside auditor. There is no reason to believe, however, that the rate practices of TVA, San Antonio, and Seattle are unique.[5] Indeed, one would expect that the practice of financing CWIP through rates would be more prevalent among smaller municipal utilities because their access to the capital markets is more limited than the access of utilities that can present financial statements audited by a prominent accounting firm and that have an established relationship with underwriters.

Conclusion

In sum, it appears that there are major municipal utilities that cover interest during construction through electric rates and that several major municipal utilities have for years set rates generating net income for reinvestment in their businesses. The former practice forces current customers to bear carrying costs for facilities under construction; the latter practice forces customers to bear a portion of the direct cost of construction.

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[5] Mr. DiGiovanni has told us that Nebraska Public Power uses bond proceeds to fund interest during the construction of new powerplants, but funds improvements of existing plants directly from revenues.

APPENDIX II

Additional Material Submitted for the Record

PSNH

Public Service of New Hampshire

Robert J. Harrison
President and Chief Executive Officer

April 10, 1984

Senator Frank H. Murkowski
Senate Energy and Natural Resources Committee
R 306 Senate Dirksen Office Building
Washington, D.C. 20510

Dear Senator Murkowski:

After two years of careful study the FERC published Order No. 298 which revised previous rules on the inclusion of CWIP in rate base. This order, which became effective July 1, 1983, recognizes that the exclusion of CWIP from rate base is not sound regulatory policy. The order gives up the idea of trying to define severe financial distress due to the difficulty in examing a utility under this criteria. Order No. 298 compromises opposing interests by including 50% of previously excluded CWIP in rate base, and thus, develops a more efficient and equitable manner to resolve the CWIP issue.

The Senate Energy and Natural Resources Committee currently has before it Senate Bill S.1069 which was developed to mitigate FERC's effort to provide a fair and reasonable response to the CWIP issue. This bill provides that a utility must prove that it is experiencing severe financial distress through lengthy filing requirements imposed in the bill. In essence, this bill would return CWIP policy to the state it was in prior to FERC Order No. 298. The bill has been called a compromise by its sponsors but in reality it is anti-consumer legislation. The bill would be harmful to all ratepayers' interests because the customers will pay higher rates over the life of the plant. As a direct result of this bill, the utility's cost of debt and equity capital will be higher, and the customer will pay a very large increase in rates when the plant comes in service. Accordingly, the customer has no assurance of adequate electric service at the lowest possible cost. Rates which include CWIP are higher during the construction period than they would have been without CWIP, but they will be significantly less than rates excluding CWIP over the life of the facility.

Aside from the fact that Senate Bill S.1069 would overturn the final FERC rule on CWIP, there is another serious concern. If the bill were to become law, precedent will be set for other individuals or special interest groups to overturn rulings by the FERC. The FERC has the authority and the expertise necessary to set regulatory policy and considers the interests of all parties involved. Other individuals or special interest groups do not have the resources that are available to the FERC and may be motivated by factors extraneous to the issue, disregarding the interests of all parties involved.

We, at the Public Service Company of New Hampshire, are very aware of the negative impact that anti-CWIP legislation has on the consumer and the utility. The Company feels very strongly that if it had been allowed to earn a return on CWIP it would not be in the severe financial condition it finds itself in at the present time. The Company is hopeful that you will consider the detrimental effects Senate Bill S.1069 will have on the consumers and the utility industry. We wish to have this correspondence included in the record of hearings addressing this issue.

Very truly yours,

RJHarrison

R. J. Harrison

RJH:k

cc: Senator Gordon Humphrey
Senator Warren Rudman

STATEMENT OF THE AMERICAN PAPER INSTITUTE
TO THE SENATE SUBCOMMITTEE
ON ENERGY REGULATION
WITH RESPECT TO S 1069, APRIL 12, 1984

On behalf of the U.S. pulp, paper and paperboard industry, the American Paper Institute (API) is pleased to submit comments to the Senate Subcommittee on Energy Regulation on S 1069 and other legislation to regulate a utility's ability to include Construction Work in Progress, or CWIP, in its rate base.

API is the national trade association of the pulp, paper and paperboard manufacturers in the United States which produce over 90% of the nation's pulp, paper and paperboard output. As the third largest consumer of purchased electricity among manufacturing industries in the U.S., the paper industry considers the reliability and availability of electric power to be of major importance for continuing operations.

The industry basically supports the intent of S 1069 to set statutorily the traditional policy under which the Federal Energy Regulatory Commission (FERC) had been operating with respect to CWIP costs. Allowance of CWIP in the rate base requires current customers to pay for the financing costs of assets that are not yet "used and useful." The used and useful standard refers to the principle that ratepayers should only pay for plants that are servicing their electrical demands. When CWIP is in the rate base, today's customers pay both the cost of today's fuel generating units and the financing cost of tomorrow's more expensive but presumably more fuel efficient generating units.

The paper industry believes that the used and useful standard should be maintained as the general approach to the inclusion of CWIP in the rate base.

The provision in S 1069 to disallow the payment of CWIP to utilities until the Commission makes a final decision is supported by the paper industry as this would ensure adequate protection to the ratepayer. The paper industry is disturbed by the FERC's recent regulations which allow wholesale electric utilities to seek permission to include up to 50% of their CWIP costs in their rate bases. Although the FERC examines a utility's construction plan to ensure that the costs are "prudent," it appears that the inclusion of 50% of CWIP costs in the rate base could become almost automatic for those utilities requesting it.

The paper industry supports the provisions in S 1069 specifying the use of a rigorous test on a case-by-case basis to determine eligibility for inclusion of CWIP in the rate base. The criteria established in S 1069 for a utility to qualify for CWIP relief place the burden of proof on the utility, not the consumer. The bill requires that a utility prove that it is in severe financial difficulty unless CWIP is included in the rate base, submit a statement which explains the need for construction of a plant and assesses alternatives to construction of a plant, including power pooling, energy efficiency improvements, cogeneration and small power production. Based on the information supplied by a utility to the FERC, the Commission is required by a provision in the bill to find, in an evidentiary hearing, that the proposed or ongoing construction work in progress is reasonably necessary to meet customer demand for energy services at the least cost and that any mismanagement will not hinder the alleviation of severe financial difficulty in the future. Only then is a utility in severe financial difficulty allowed to include the cost of CWIP in its rate base.

Until recently, the FERC has permitted CWIP in the rate base on a routine basis for pollution control and conversion of oil and gas fired facilities to alternative fuels. On a case-by-case basis, a utility in severe financial difficulty has been eligible to qualify for rate relief when CWIP becomes the least costly method for the utility to finance new construction. This bill designates two special cases when charging for CWIP would be allowed on a routine basis - installation of pollution control equipment and conversion of facilities from oil and gas to alternative fuels. These two provisions should only apply when the facilities are already used and useful and the capital expenditures are required by Federal law (e.g., Clean Air Act New Source Performance Standards and Powerplant and Industrial Fuel Use Act fuel conversion requirements).

In summary, the paper industry believes that the policy under which the FERC had historically been operating is reasonable and just and should not have been changed. The principles embodied in S 1069 should be enacted to ensure that today's ratepayer pays for the cost of building new utility plants only when this is the least costly means of preserving reliable electric service for all customers. The paper industry is sympathetic to the difficulties which the utility industry faces in trying to match future generating capacity with uncertain customer demand. It also recognizes the difficulties, given the economic climate, of financing such increased capacity without adding an immense financial obligation which, by necessity, would be borne by future customers. The paper industry is not opposed to CWIP in all instances. It supports the approach taken in the House-passed bill, HR 555 as amended, which does not prohibit CWIP but sets criteria a utility must meet to include CWIP costs. The paper industry feels that such a framework allows utilities to finance additional capacity in a manner which would supply additional power as needed and serve ratepayers of both today and tomorrow in a fair and equitable manner.

NRECA **NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION**
1800 Massachusetts Avenue, N.W.
Washington, D.C. 20036/202-857-9500

April 19, 1984

Mr. Al Astrin
Senate Committee on Energy and
Natural Resources
304 Senate Dirksen Office Building
Washington, D.C. 20510

Dear Mr. Astrin:

I would appreciate your making the necessary arrangements to have the enclosed statement by Thomas J. Bolch included in the record of the Energy Regulation Subcommittee regarding S. 1069, S. 817 and H.R. 555.

Should there be any questions or you need additional information, please contact Charlotte Wilmer, Legislative Representative at 857-9563.

Sincerely,

Wally Rust

Wally Rustad
Acting Dept. Director

WR:dfs

Enclosure

Statement of THOMAS J. BOLCH
Before the Subcommittee on Energy Regulation
Senate Committee on Energy and Natural Resources
on S.1069, S.817 and H.R.555 - CWIP

My name is Thomas J. Bolch. I am General Counsel of North Carolina Electric Membership Corporation (NCEMC), a generation and transmission cooperative that is the power supplier for 27 of the 28 distribution electric cooperatives serving the state of North Carolina. I have represented Cooperatives before the Federal Power Commission (now FERC) since 1970 and have been involved in opposing CWIP both before FERC and before the Courts on appeal from FERC since 1974.

I have five points for consideration by the committee.

-- Opponents of S.1069 have stated that CWIP concerns only a question of timing of payments for the financing costs of plant construction. This is wrong. In the wholesale context it concerns WHO pays, not WHEN who pays. For example, NCEMC need only give three-years' notice to cancel contracts with Carolina Power and Light Company. So, up until the time it actually gives notice of cancellation it will be required to pay CWIP even though it will not receive any power from the plants and even though it has been attempting to provide its own power in the CP&L area since the early 50's but has been prevented from doing so by barriers to entry which are the subject of an antitrust suit in the U.S. District Court for the Middle District of North Carolina.

-- CWIP in the wholesale context, which is the only context regulated by FERC, severely and negatively impacts on the ability of wholesale customers to remain in business and to continue providing a competitive yardstick to the investor-owned utilities. All of the arguments in favor of CWIP put forth by FERC and by the investor-owned utilities are arguments that apply only in the retail context. They do not apply where the customer is a wholesale customer that is already carrying its own CWIP through its own plant construction program or who would be doing so but for anticompetitive barriers to entry erected by monopolistic suppliers.

-- CWIP will not increase internally generated funds for construction. CWIP is not shareholder-created funds, it is coerced from customers. I hope it struck members of the committee as being ludicrous when someone earlier today, either Mr. O'Connor from FERC or one of the other industry witnesses, strongly espoused CWIP because it would increase "internally generated funds for construction".

-- FERC's "solution" for the double-whammy is no solution at all. It was cobbled up after the wholesale customers complained that Order 298 was unconstitutional as being over-inclusive. FERC knows that its requirement that a wholesale customer show that its needs were not responsible for the decision to build is an impossible burden to meet in the context of a proceeding before

FERC. Yet those wholesale customers who, like NCEMC, have been trying to build their own plants will be required by Order 298 to pay for their competitors' plants as a result of their being unwilling captive customers who remain so because of monopolistic barriers to entry, one of which is Order 298 itself. You can't afford to pay the carrying costs of your own plant and the carrying cost of your competitors' plants.

-- The apologists for the FERC Order 298 fiasco claim that Order 298 was necessary because no utility had been able to obtain CWIP under the "financial distress" criterion of Order 555 (FPC's CWIP order that preceded FERC's Order 298), which one member of the EEI panel described as a labyrinth erected in front of the hospital emergency room door. The reason no utility ever obtained CWIP under Order 555 was that none was then suffering such financial distress as to need CWIP and furthermore, if one had been, CWIP on 8% of its business would not have saved it from the "black hole" it was being sucked into by its own mismanagement of a large nuclear plant construction project. In short, CWIP in a wholesale context across the board even at the 50% level is merely another industry-sponsored mechanism for filling its coffers at the expense of the public interest and to the detriment of a viable competitive yardstick. S.1069 and H.R.555 should be enacted into law at the earliest possible moment. NCEMC is currently paying $8 million per year to CP&L as a result of this travesty, $8 million of which it could be devoting to its own plants.

TESTIMONY OF THE GEORGIA POWER COMPANY

ON S. 1069

"CONSTRUCTION WORK IN PROGRESS
POLICY ACT OF 1983"

PRESENTED BY

ROMNEY E. SCOTT
SENIOR VICE PRESIDENT
ECONOMIC SERVICES
GEORGIA POWER COMPANY

BEFORE THE

SENATE SUBCOMMITTEE ON

ENERGY CONSERVATION AND POWER

MAY 18, 1984

Mr. Chairman and Members of the Subcommittee:

I am Romney E. Scott, Senior Vice-President of Economic Services at Georgia Power Company, one of the four operating companies of the Southern Electric System. The Southern System serves more than two million retail and wholesale customers in four states and provides electric power to several other states through bulk power sales. My comments today regarding HR 555 present the views of Georgia Power Company on the critical issue of the inclusion of Construction Work in Progress in rate base.

HR 555 states on page 1, lines 8-10 and page 2, lines 1-2, "... it is in the public interest that electric utilities have a cash flow adequate to support investments in resources that are in the interest of their ratepayers;" and "it is in the public interest that electric energy services be delivered at least possible cost, and with adequate reliability, and that unnecessary rate increases be avoided ..."

We at Georgia Power Company agree with these goals, but submit that the passage of HR 555 will in fact serve as a major factor in keeping such goals from being achieved. We believe that this bill will in fact result in higher rates charged to the consumer.

Without the existence of adequate cash flows to support necessary investments, there will be loss of the reliable electric service that we, as Americans, take for granted. The financial condition of the electric industry did not occur overnight, nor can it be solved quickly. The situation has evolved because the cost of new generating plants and the length of time required to construct them has increased dramatically over the last few years. The reasons for this have been pointed out many times. The fact is that the industry today is substantially different than it was in the pre-oil embargo days. When it took no more than four to five years to construct a plant, and costs were not rising significantly during the construction period, the impact on the utility of not including that investment in rate base until the plant began generating electricity was not severe. In today's world, including Construction Work In Progress (CWIP) in rate base recognizes the economic realities of the world we live in and provides an additional means of allowing the electric industry to return to the financial health necessary for the continued economic growth of our Country.

When CWIP is included in rate base, the signals sent to the ratepayers are a better indication of the actual cost of the energy he is consuming. Rates currently in effect, referred to as cost-based rates, recognize only historical cost. They do not take into consideration the cost to replace the capacity that is being consumed. When the cost to construct the replacement asset is a victim of more than a decade of double-digit inflation, and the period to complete the construction more than doubles, the cost of the new asset is significantly higher than the cost of the asset being replaced. Setting rates based on the old asset's cost sends a false signal to the ratepayers. The inclusion of CWIP in rate base also serves to stabalize rates and avoid the abrupt increases that occur when a major generating plant comes on line.

The inclusion of CWIP in rate base also reduces the cost of the plant over its economical life. Since the investment is earning a current return, the amount capitalized is reduced by the amount of the return. In very large plants with long construction periods, this can be a significant reduction in the capitalized investment. In addition, including CWIP in rate base would tend to assist in the upgrading of the company's securities, resulting in lower overall cost of capital for both the present and future ratepayers.

The inclusion of CWIP in rate base has been an issue in the regulation of electric utilities for many years. In 1981, the FERC issued a notice of proposed rulemaking on the issue in recognition of the fact that the rules in effect at that time were outdated and simply did not work. After almost two years of deliberations and thousands of pages of comments and testimony from interested parties, the FERC issued Order No. 298, which represented a compromise between the opposing parties and allowed utilities to recover a cash return on 50% of CWIP. The order passed unanimously. We firmly believe that the CWIP policy set forth in Order 298 is the result of a fair and objective examination of the issues by an expert agency. Even though we believe that 100% of CWIP ought to be in rate base, the new policy is a substantial and sensible improvement over the old "financial distress" policy as set forth in Order 555.

HR 555 legislatively reverses FERC Order No. 298, essentially reinstating the old FERC Order No. 555, which has already been determined to be inadequate through a lengthy and detailed rulemaking process. It also adds additional very rigorous and complex requirements that basically eliminate the possibilty that any significant amount of "other" CWIP could be included in rate base. The bill also requires a "preliminary adjudicatory hearing on the matter" which will serve to substantially increase the length of time and cost already necessary to settle FERC cases. As we all remember, the FERC's proposed rulemaking on this issue specifically stated that its purpose was "to adopt a rule which best eliminates or reduces extensive and frequently unnecessary litigation ..." If a utility is in "severe financial difficulty", this added delay in receiving rate relief could well result in irreparable harm to the company's deteriorating financial health.

I am not here to repeat all of the arguments for including CWIP in rate base; this has been done many, many times before, and is sufficiently covered in the EEI testimony that has been presented before this Committee. I will state that we are in total agreement with such testimony.

I am here to also state that we strongly oppose the enactment of HR 555 or any similar legislation. Such legislation is not in the best interest of the ratepayer, the stockholder, or the electric utility industry. This legislation only serves to undermine the substantial progress that the FERC has made in updating antiquated regulations which were developed when the electric industry operated in a substantially different economic and financial environment. Allowing the inclusion of CWIP in rate base not only will help the industry to return to and maintain financial health, but will also allow the price signals sent to ratepayers to more closely resemble reality.

The financial health of some companies is improving. This is the result of a combined effort of both the industry and regulators who recognize the need for fair and reasonable regulations which offer the opportunity for fair and reasonable rates of return and as a result of the conclusion of many utilities' construction programs. The inclusion of CWIP in rate base improves management efficiency by reducing the current constraints on raising debt and equity capital. This allows management to pursue the optimal construction program rather than adopting a "capital adverse" strategy. Contrary to a wide misconception that CWIP in rate base encourages the construction of unneeded plants, some utilities which have all or a portion of CWIP in rate base are choosing not to build. Allowing utilities to file to include CWIP in rate base does not change the fundamental rule of utility ratemaking which allows a utility to recover only those costs prudently incurred.

The road to recovery is not a short one, and it will be some time before the improved financial health becomes apparent in improved bond ratings and new issues of stock selling at book value. FERC Order No. 298 was a step in the right direction, and we must not take steps backward by enacting legislation such as HR 555.

STATEMENT BEFORE THE COMMITTEE

By:

William F. Matson

President, Pennsylvania Rural Electric Association
Executive Secretary, Pennsylvania Municipal Electric Association

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

S. 1069 and H.R. 555, legislation that would prohibit the automatic inclusion
of construction work in progress
in wholesale electric rates

May 18, 1984

Mr. Chairman, my name is William F. Matson. I am the President of the Pennsylvania Rural Electric Association and of the bulk power supplier of the electric co-ops in Pennsylvania and New Jersey, Allegheny Electric Cooperative. The 14 non-profit, consumer-owned rural electric cooperatives that comprise our Association serve over 600,000 members. I am also the Executive Secretary of the Pennsylvania Municipal Electric Association, an organization that represents the interests of the Commonwealth's 34 local publicly-owned municipal electric systems.

During its consideration of S. 1069 and H.R. 555, this Committee has heard much general discussion regarding the impact on consumers of the inclusion in wholesale electric rates of the costs associated with construction work in progress (CWIP). In the brief time allocated to me this morning, I would like to take a different tack and discuss the impact of CWIP specifically on the consumers I represent.

First, if the FERC rule on CWIP is not reversed, rural electric cooperative members in Pennsylvania and New Jersey will unnecessarily pay an additional $64 million on their electric bills through 1996. This $64 million would represent the forced investment that these consumers will have to make in new generating facilities that may or may not ever serve them.

Second, although the $64 million forced investment that our consumers will have to make under the FERC CWIP rule is significant to them, it is quite insignificant to the private power companies in which the forced investments will be made. Revenue received from rural electric cooperatives represents only 2.3 percent of the total revenue of the private power companies of Pennsylvania. The revenue the power companies receive from the Commonwealth's municipal electric systems represents an even smaller proportion of their total revenues; only eight-tenths of a percent. It is easy to see, therefore, that the extra revenue the power companies stand to receive under the FERC CWIP rule will not substantially influence their go/no-go decisions on future power plant investments.

Third, the forced investment our consumers will have to make in the private power companies will undermine competition in the electric utility industry in Pennsylvania. This will occur for two reasons: First, because of state legislation enacted in Pennsylvania two years ago, retail customers of the power companies will be spared from having to pay CWIP while consumers of rural and municipal electric systems will, under the FERC rule, be forced to pay CWIP, thereby creating a significant price squeeze. The FERC rule inadequately addresses the problem of price squeeze because power companies will be permitted to collect CWIP before they must prove financial need. As a result, months, even years will pass between the time money is collected from wholesale customers and the time the money would be refunded if FERC finds that financial need did not exist on the part of the private utility. Second, consumers of municipal and rural electric systems that are currently investing in their own generating facilities will face a 'double whammy' by being forced to pay for two new plants; the one they own and another, although it may be the same, owned by the power company from which they are purchasing power on a wholesale basis.

The FERC rule makes it increasingly difficult for wholesale power purchasers to develop their own generating capacity. The one thing, the rule requires that wholesale purchasers must prove that their suppliers are not taking their needs into account in power supply planning. It is, needless to say, difficult to prove what was in a person's lines. We respectfully request that the Committee adopt an amendment incorporating provisions from H.R. 555 providing that customers should not be obligated to pay CWIP to the extent that they will not benefit from a power plant under construction.

Today, in some parts of Pennsylvania, rates charged by rural electric cooperatives are double those charged by the neighboring private utility. This rate disparity will be aggravated by the FERC CWIP rule, thereby undermining the stability — indeed the future viability — of consumer-owned utility systems. The demise of non-profit, consumer-owned rural and muincipal electric systems will eliminate the yardstick by which the performance of private utilities can be measured.

Fourth, during the last decade, over 100 power plants have been cancelled or deferred nationwide after more than $10 billion have been invested in them. Considering the fact that Pennsylvania is the home of Three Mile Island and Limerick, it is not difficult to understand why Keystone state consumers are concerned about being forced to invest in power plants that may never serve them.

Fifth, despite the fact that Pennsylvania is the home of the power companies that own Three Mile Island, it is also the home of some power companies that are doing quite well financially. The April 17, 1984, headline in The Energy Daily, 'For Utilities, 1983 was A Very Good Year,' definitely applies to several power companies in the Commonwealth. For example, the Pennsylvania Power and Light Company enjoyed profits in 1983 that were 23 percent higher than they were in 1982 and the profits of the Philadelphia Electric Company were up 30 percent last year. The FERC rule was based on the thesis that the electric utility industry is in financial trouble and that it needs the assistance that automatic, across-the-board CWIP can provide. If, in fact, however, the industry is generally not in financial difficulty, one of the basic principles underlying the FERC rule must be dismissed.

Sixth, not known as a haven for 'yuppies,' the population of Pennsylvania is older and poorer than the national average. As a result, the forced investment that the FERC CWIP rule will impose will fall most heavily on those who can least afford it.

Seventh, because our population is older than the national average, potentially millions of Pennsylvania consumers face the prospect of investing in a new power plant for years, only to move to a sunnier climate when they retire and before the plant in which they have been investing enters commercial service. To add insult to injury, they may face a similar situation at their new home where they may not live long enough to see this second power plant enter service.

To conclude Mr. Chairman, I would like to turn to one additional point. If the FERC CWIP rule will not provide significant amounts of new capital for the private utility industry that, after careful examination, does not need it anyway, then why are the nation's private power companies fighting so hard to defeat S. 1069 and H.R. 555?

I can only think of one reason. To me, it appears that the power companies see automatic, across-the-board inclusion of CWIP in wholesale electric rates as a foot in the door. By spinning off generating facilities that serve retail customers, facilities that would normally be under the jurisdiction of state regulatory bodies, the power companies would stand to gain additional billions of dollars of revenue as a result of more liberal FERC regulation. I believe we must preserve the traditional system that has worked so well; a system that would be restored by S. 1069 and H.R. 555.

I appreciate this opportunity, Mr. Chairman, to appear before the Committee to speak in favor of legislation that would restore the traditional and proper balance between utility shareholders on one hand, who are the people who should rightly take the risks and the profits associated with new electric generating facilities; and utility ratepayers on the other hand, who are the people who should only pay for new generating facilities when they become used and useful. I urge the Committee to expeditiously and favorably consider S. 1069 or its companion, H.R. 555. Thank you Mr. Chairman for this opportunity.

STATEMENT SUBMITTED BY

ROBERT A. GEORGINE, PRESIDENT

BUILDING AND CONSTRUCTION TRADES DEPARTMENT

BEFORE THE

SUBCOMMITTEE ON ENERGY REGULATIONS ON

S.817, S.1069, AND H.R.555

MAY 18, 1984

U. S. SENATE

I would like to thank Senator Murkowski for allowing the Building and Construction Trades Department to submit this statement in opposition to H.R.555, S.817, and S.1069.

The fifteen unions which make up the Department supports the Federal Energy Regulatory Commission (FERC) position to allow utilities to include Construction Work in Progress (CWIP) in their wholesale electric rate base.

The Building Trades unions have a strong, personal interest for two simple reasons.

FIRST, WE PERCEIVE AND UNDERSTAND THE NEED FOR INEXPENSIVE AND RELIABLE ENERGY.

AND SECOND, WE PROVIDE THE EXPERT MANPOWER TO CONSTRUCT THESE NEEDED FACILITIES.

OVER THE PAST SEVERAL MONTHS, WE HAVE REVIEWED THE ARGUMENTS ON BOTH SIDE OF THE CWIP ISSUE AND HAVE REACHED THE FOLLOWING CONCLUSIONS:

THE RESTRICTIONS ON FERC RATEMAKING AUTHORITY CONTAINED IN LEGISLATIVE PROPOSALS PENDING BEFORE THE SUBCOMMITTEE, WILL NOT SERVE TO PROMOTE THE NATION'S INTEREST IN MAINTAINING A STRONG ELECTRIC POWER INDUSTRY WHICH IS VITAL TO ECONOMIC GROWTH AND NATIONAL SECURITY.

RATHER, THE LIMITATIONS IMPOSED ON INCLUSION OF CWIP IN WHOLESALE ELECTRIC RATES WILL RESULT IN HIGHER LONG-TERM COSTS TO RATEPAYERS AS WELL AS SERIOUSLY JEOPARDIZING THE ADEQUACY AND RELIABILITY OF ELECTRIC POWER SUPPLIES TO UTILITY CUSTOMERS THROUGHOUT THE COUNTRY.

AN ADEQUATE AND RELIABLE SUPPLY OF ELECTRIC POWER AT AFFORDABLE PRICES IS AN ESSENTIAL ELEMENT OF SUSTAINED ECONOMIC GROWTH, CREATING NEW JOBS, MAINTAINING OUR NATIONAL SECURITY, AND REDUCING OUR DEPENDENCE ON IMPORTED OIL.

ELECTRICITY IS AMERICA'S MOST VERSATILE ENERGY FORM.

ELECTRIC POWER PLANTS CAN CONVERT VIRTUALLY ALL OF OUR DOMESTIC RESOURCES INCLUDING:

COAL, NATURAL GAS, URANIUM, GEOTHERMAL, AND HYDROPOWER, AS WELL AS A NUMBER OF RENEWABLE RESOURCES, INTO A CLEAN AND EFFICIENT SOURCE OF POWER FOR AMERICA'S HOMES AND FACTORIES.

BUILDING TRADESMEN TAKE GREAT PRIDE IN THE ROLE THEY HAVE PLAYED IN CONTRIBUTING TO THE DEVELOPMENT OF THE U.S. ELECTRIC POWER INDUSTRY.

BECAUSE OF OUR HARD WORK, WE PUT AMERICA IN A POSITION AS THE WORLD'S LEADING INDUSTRIALIZED NATION, DUE IN LARGE PART TO A PLENTIFUL SUPPLY OF LOW COST ELECTRIC POWER.

BOTH INDUSTRY AND INDIVIDUAL CONSUMERS WERE THE BENEFICIARIES OF THIS WORK.

NOW, AS OLDER PLANTS BEGIN TO TIRE, AND AS DEMAND GROWS BECAUSE OF ENERGY - CONSUMING HIGH-TECH INDUSTRIES, WE NEED TO ADDRESS THE PROBLEMS OF THE FUTURE.

AMERICA NOW HAS THE CAPACITY TO PRODUCE ABOUT 635,000 MEGAWATTS.

BY THE END OF THE CENTURY, THE DEPARTMENT OF ENERGY ESTIMATES WE WILL NEED AN ADDITIONAL 185,000 - 440,000 MEGAWATTS TO KEEP UP WITH DEMAND.

THEREFORE, THERE IS NO QUESTION ABOUT THE NEED FOR NEW PLANTS, BUT THEIR SEEMS TO BE A QUESTION IF WE CAN COALESCE OUR RESOURCES TO SEE THIS NEEDED CAPACITY TO COME ON LINE.

THE GROWING DELAYS AND CANCELLATIONS IN NEW PLANT CONSTRUCTION STEMMING FROM THE UTILITY INDUSTRY'S CHRONIC CASH-FLOW PROBLEMS RESULTS IN HIGHER ELECTRICITY COSTS, AND THREATENS THE LONG-TERM SECURITY OF ELECTRICITY SUPPLY EVEN UNDER THE MOST CONSERVATIVE UTILITY DEMAND PROJECTIONS.

TODAY'S DECISIONS DETERMINE ELECTRICITY SUPPLY FOR THE NEXT DECADE AND BEYOND.

BECAUSE OF EXTENDED LEAD TIMES FOR PLANT CONSTRUCTION AND LICENSING -- SOMETIMES UP TO FIFTEEN YEARS -- WE NEED TO START CONSTRUCTION NOW IF WE ARE TO HAVE ADEQUATE SUPPLIES OF ELECTRICITY BY THE YEAR 2000.

BUT, AT THE SAME TIME, EXISTING REGULATORY AND FINANCIAL RISKS MAKE IT HIGHLY UNLIKELY THAT NEW CAPACITY CAN BE ADDED BY THAT TIME.

CONSTRUCTION WORKERS ARE ALSO RATEPAYERS, AND ARE VERY CONCERNED ABOUT RATE INCREASES.

THEREFORE, IT IS ESSENTIAL THAT THE ADMINISTRATION, CONGRESS, BUSINESS, AND CONSUMER GROUPS WORK TOGETHER IN SUPPORTING POLICIES WHICH WILL ALLOW UTILITIES TO CONSTRUCT NEEDED ELECTRIC POWER FACILITIES TO SUSTAIN OUR ECONOMIC GROWTH WHILE PROTECTING THE INTERESTS OF RATEPAYERS.

WE DO NOT CLAIM TO BE EXPERTS IN THE COMPLEXITIES OF DESIGNING FAIR AND EQUITABLE UTILITY RATES.

At the same time, however, one need not be a Nobel Laureate in economics to recognize that the nation's most vital and capital intensive industry can no longer afford to finance new plants costing billions of dollars, over a decade or more, without being allowed a current cash return on its investment.

Our members pay their monthly electric bills and are just as sensitive as any other sector of our society to the problem of rapidly escalating energy costs.

At the same time, however, they are even more aware of how crucial electricity is to our jobs, our economic growth and our national security.

Thus, when we see the major U.S. manufacturers and engineering concerns dismantling their capability to design, manufacture, and construct electric generating plants while our utilities enter into long-term contracts to purchase electricity from new plants financed by U.S. ratepayers in Canada and Mexico, something is clearly wrong.

WITH EACH NEW POWERPLANT BUILT IN CANADA TO SUPPLY THE U.S., WE LOSE TENS OF THOUSANDS OF JOBS, AND HUNDREDS OF MILLIONS, IF NOT BILLIONS, OF DOLLARS IN LOST WAGES AND TAXES.

FURTHERMORE, WE ARE ALSO TELLING THOSE INDUSTRIES WHICH RELY ON ADEQUATE AND RELIABLE POWER SUPPLIES, THAT U.S. UTILITIES CAN NO LONGER BE RELIED UPON TO MEET THEIR FUTURE NEEDS AND THEY SHOULD MOVE THEIR PLANTS OVERSEAS.

I SAY ENOUGH IS ENOUGH.

American's economic future is directly linked to America's energy future and electricity is the vital ingredient in both.

The 4 million building tradesmen of the Building and Construction Trades Department urge members of Congress not to repeat the short-sighted policies of the past which have resulted in a continuing erosion of our industrial base and the export of millions of jobs.

Instead, we urge you to support the new policy of the FERC regarding CWIP which would be a major step towards assuring the future of our electric power industry.

May 24, 1984

The Honorable Frank Murkowski
Chairman, Senate Subcommittee
  on Energy Regulation
U. S. Senate
306 Dirksen Senate Office Building
Washington, D.C. 20015

Dear Senator Murkowski:

With regret that I was unable to give oral testimony at your May 18 Hearing on the Construction Work in Progress (CWIP) issue, enclosed please find two copies of a written statement for inclusion in your hearing record on the subject. Please get in touch with me if you have any further questions on the information in this statement.

Best wishes.

Sincerely,

David W Penn
David W. Penn
General Manager

blm

Enclosure

cc: Senator William Proxmire

Statement
of
David W. Penn
General Manager
Wisconsin Public Power Inc. SYSTEM
on
S.1069 and H.R.555
The "Construction Work in Progress Policy Act of 1983"
before the
Subcommittee on Energy Regulation
Senate Committee on Energy and Natural Resources
Submitted for the record of the Hearing
May 18, 1984

My name is David W. Penn. I am the General Manager of Wisconsin Public Power Inc. SYSTEM. We are a wholesale electric utility owned and operated by our municipal members. We provide electricity to our 27 members throughout the state of Wisconsin for them to distribute to their retail customers. At present we serve 290 megawatts of peak load and approximately 1.6 billion kilowatt-hours of electricity amounting to annual revenues of about $75 million.

Over the long haul, the goal of our members for their wholesale utility is to become self-sufficient by owning generation and transmission facilities to serve their communities' needs. In the meantime, however, WPPI SYSTEM must be content to purchase electricity from Wisconsin's private utilities under the terms of wholesale rate schedules on file with the Federal Energy Regulatory Commission (FERC). Over 99% of WPPI SYSTEM's costs go toward these wholesale power purchases. Translated even further to the level of our member communities, an average of at least 80% of a local municipal electric utility's overall costs will go to pay for the price of wholesale power purchases.

Accordingly WPPI SYSTEM, speaking for itself and for its 27 individual members, is very directly interested in these hearings. We strongly urge passage of S.1069 to go along with the previous passage of H.R.555 by the House of Representatives on February 8, 1984 by the resounding margin of 288-113. This following statement provides my reasons for urging Senate passage of S.1069. It is meant to shed light on the particular perspective of an emerging joint action municipal agency like ours which, acting on behalf of its members, is a wholesale customer of those utilities that are allowed to include construction work in progress (CWIP) in their rate bases under the current FERC rules.

Without S.1069, private utilities will continue to be allowed by the FERC to include 50% of their CWIP in wholesale rate base almost automatically, and to earn a rate of return on this larger cost base. With S.1069, the FERC policy will be returned to where it had been until just last July, 1983 - to where CWIP is allowed only for specific environmental or conservation reasons or in the case where severe financial difficulty can be demonstrated.

What are the major interrelated problems with the recently instituted FERC policy? 1) Automatic allowance of CWIP in rate base will be more expensive for consumers. 2) It will not be as likely that those ratepayers who pay to construct a specific facility will be the same ones to get the use by delivery of electricity from that facility. 3) The FERC's CWIP policy is anticompetitive towards joint action agencies like ours and toward their municipal electric utility members. 4) The FERC policy eliminates an important element of the management accountability that is necessary in a private utility's planning for and construction of costly new facilities.

CWIP will cost consumers more

The new FERC policy allows CWIP in rate base during the construction period and well before such facilities are on line providing electricity to consumers. With today's construction times this period can easily stretch out as far as 7-15 years. It is intuitive and it is easy to demonstrate that consumers pay more if they must pay for facilities while they are being constructed as well as throughout the useful lifetime of those facilities, rather than paying for such facilities just during their useful lifetime. The Edison Electric Institute, representing its investor owned utility members, has tried to demonstrate the opposite in selling the CWIP issue as a pro consumer measure. It could not do this without using an unbelievably flawed model that assumed no alternative costs - that the money to be paid for CWIP has no time value to utility consumers.

These same proponents of CWIP argue that consumer costs will all even out over the life of the plant. Even this argument is flawed unless one unrealistically assumes that every consumer will stay in place over the entire life of the plant and that there will be no more plants built. As soon as another plant is added, the consumer's breakeven point is extended to the end of the service life of that new facility.

Municipal wholesale customers like WPPI SYSTEM feel the threat of this cost increase in their own special ways. Late this last year Wisconsin Electric Power Company (WEPCO) prepared to file a wholesale electric rate increase with the FERC. To give you an idea of the impact of the new FERC CWIP policy, WEPCO's proposed rate increase to its Wisconsin wholesale customer class was to have been for approximately $4 million.

However, with the addition of newly allowed CWIP it was to have doubled this increase to $8 million. Settlement was reached before litigation commenced.

However, the settlement process itself points up added costs that the FERC's CWIP policy forces onto municipal wholesale customers. Under the threat that the investor owned utility can now file for an amount of CWIP-related rate increase that is nearly uncontestable, the municipal customer is likely to be forced into a position of paying a premium in the bargained rate settlement to avoid this. Continued to its logical conclusion, wholesale customers will pay these premiums throughout the construction period, as well as having to pay for the facilities when they come on line. Thus, having the FERC CWIP policy in place adds to wholesale customer costs even if settlements are reached before the FERC has to rule. In the alternative, the current policy is likely to result in unwanted litigation rather than passive payment of the CWIP settlement premiums.

There are at least two ironies involved with the current FERC treatment of a CWIP policy which was ostensibly designed to help the financial plight of the investor owned utilities. First, the plight of the utilities, at least here in Wisconsin, is one that most businesses would envy. The Wisconsin investor owned electric utilities are all rated AAA in the financial markets. They have no trouble raising money at the best possible interest rates. In fact, they are so healthy that all are projected to be net generators of cash in the next several years and to have no need for external financing. Our situation here in this state is an ideal one to demonstrate the need for the FERC to deal with the issue of its allowance of CWIP with a case by case approach.

The second irony is that the allowance of CWIP has a devastating negative impact on the rates of wholesale customers but is a relatively minor positive influence towards the financial relief of the private utility supplier. Using the previous example, the $4 million of CWIP rate increase for which WEPCO was contemplating filing is only about 5% of their large wholesale rate base. Of course, it is an even much smaller portion of their overall company operations. In contrast, a municipal's customer rates would go up dramatically since over 80% of a municipal utility's operating costs go to pay for wholesale power supply in Wisconsin.

Unless "used and useful," wrong people may pay

The second thing wrong with the FERC position on CWIP is that it violates sound historical rate making policies that match up the people who pay for facilities with those who benefit from the electricity output of those facilities. This has come to be known as the "used and useful" concept. The new FERC policy on CWIP means that customers must now pay for plants before they go in service and are used and useful. This country fought its own Revolutionary War over this same principle of injustice as it applies to taxation.

In today's world, a particular residence in a particular electric utility's service territory may be occupied by three or four different owner-ratepayers during the 7-15 years that it takes to construct a plant. Often the people paying the utility for CWIP in their electric bills during this period have died or have moved into another utility's service territory before they get any benefit of electricity from the plant that is being constructed. America's most mobile subgroups of population, the ones who are usually most vulnerable, would seem to be hardest hit by this problem of paying for facilities that someone else will use.

All of this assumes that the plant being constructed will be finished and put into useful service. A casual look at the _Wall Street Journals_ of the past year will show the reader that plant cancellations after construction is well along the way have become a common occurrence. In many cases billions of dollars have been spent before it is decided to pull the plug. Nuclear power plants are not the only ones being halted. This adds up to even higher costs being paid by ratepayers who will not benefit from the construction program. It also signals a shift of the management risk of construction choices from the investor to the ratepayer. This is because utilities now can earn a profit on CWIP up to the point where a plant is abandoned and then recover construction costs of a cancelled plant from ratepayers through FERC approved cost amortization programs.

The problem of ensuring that those who benefit be the ones who pay has special significance for joint action agencies like WPPI SYSTEM. The ultimate goal of such collective municipal efforts is to become owners of generation and transmission facilities. Since we must usually continue to purchase power from private suppliers until we become owners, at some time we will find ourselves paying for facilities that we may not use or, in effect, paying for two sets of bulk power supply facilities (our own, and those of the company as well). I will have more on this below under the subject of anticompetitive effects.

New CWIP policy is anticompetitive towards municipals

Municipal utilities generally got into business at the time of their formation decades ago in order to make their community independent and self sufficient by supplying their own power needs. Over the years, the economies of large scale generation plants and high voltage transmission lines have forced municipals either to rely on their old, undersized facilities or to become power purchasers from large investor owned utilities. Since the mid 1970s, municipals throughout the country have begun returning to their original purpose of self sufficiency through the mechanism of "joint action" agencies. Although they differ radically from state to state, all are a collection of municipal electric utilties banding together to give themselves the option of buying or building plants that are large enough to be efficiently sized to meet competition. In turn, these emerging agencies pose the helpful threat of competition within the industry and help to keep rates down and costs carefully scrutinized.

As mentioned above the FERC CWIP policy would force many joint action agencies into paying twice for power supply capacity. Not only would that be unnecessarily costly to consumers and not square with "used and useful" principles, it would also be anticompetitive specifically towards joint action agencies. Paying twice would ruin the feasibility of most ownership options. It would also make the necessary planning and studies for the investments and conversion toward self-sufficiency a virtual impossibility. In short, it would stifle emerging competition in the bulk power supply markets and the rate benefits that such a competitive process yields to the customers of all utilities.

Competition at the retail level between the investor owned utility and individual municipals may also be harmed. The investor owned utilities are almost always integrated forward from their production activities into retail or distribution activities. As such, they are in direct competition with municipals for local retail load and new industry. If the private utility sells power to the municipal with CWIP costs included, the public entity has no choice but to raise its rates to recover costs. But if the private utility chooses not to charge CWIP expenses in its retail rates, or is told not to do so by the state regulatory commission, then a municipal is uncontrollably at a relative disadvantage in the rates that it can charge its customers as opposed to the rates that the competing private utility can offer.

Private utilities need more not less accountability in construction programs

The FERC policy on CWIP that allows utilities to recover construction costs from customers before completion shifts the risks of management decisions to those customers. It is not clear that these planning risks should be shifted from stockholders and corporate managers to ratepayers under any circumstances. But this certainly should not occur unless control over these decisions is also shifted to the ratepayers. This is obviously not the case.

Neither wholesale nor retail ratepayers are invited to sit in on corporate strategy sessions that filter through all of the alternative investment possibilities. Ratepayer approval is not required or sought for the utility's capital decisions. While the public service commissions of some states like Wisconsin act in the stead of the public in reviewing plant additions, this is not the same as having a personal interest and being involved in all of the internal corporate deliberations.

Over the last decade, more than 100 plants have been cancelled after more than $10 billion had been spent toward their completion. The toll is mounting weekly (not weakly), as recent events in Michigan, Indiana, Ohio, New York, and New Hampshire have shown. Nor has this cancellation pattern been confined to any one part of the country during this past year.

This rash of cancellations tells the observer a lot about changing economic times, changing governmental regulations, changing load forecasts, changing technologies, and changing consumer tastes. It also speaks volumes on the need for better management and more, not less, management accountability in the utility industry. These cancellations show that many in the moribund utility industry were unable and/or unwilling to adapt their decisions quickly to new consumption patterns, price elastic demands, alternative technologies, new sources of service competition, and an uncertain economic environment.

Allowing CWIP in rate base goes in exactly the wrong direction. Instead of exposing the capital decisions of managers to the discipline of the market place, it shelters them. With consumers paying a nearly guaranteed return on investment for new power plants under construction, they truly are providing and paying for the safety net in case the utility's high wire construction act takes a fall. Among other things, this safety net lessens the utility's incentives to evaluate load management, alternative energy sources and technologies, and conservation. S.1069 is particularly appropriate because it requires the FERC to find that a utility is in financial distress and has made a genuine effort to seek less costly alternatives as a condition before granting CWIP.

For these several primary reasons - CWIP will cost consumers more, it will create a ratemaking mismatch between users and payers, it is anticompetitive towards municipal electrics, and it will remove a needed element of management accountability - I urge this Subcommittee and the entire Senate to pass S.1069 in its present form. It is very similar to H.R.555. Passage of S.1069 is especially vital to municipal electric utilities who are currently wholesale customers of utilities that are now able to file for CWIP, but who need to have the option of one day owning their own generation and transmission facilities.

STATEMENT
on
CONSTRUCTION-WORK-IN-PROGRESS (S. 817 and S. 1069)
for submission to the
SUBCOMMITTEE ON ENERGY REGULATION
of the
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
for the
CHAMBER OF COMMERCE OF THE UNITED STATES
by
Susan C. DeMarr*
June 29, 1984

The Chamber of Commerce of the United States is pleased to have the opportunity to express its opposition to S. 817 and S. 1069, legislation to overturn a recent Federal Energy Regulatory Commission (FERC) rule (Order No. 298) on construction-work-in progress (CWIP) and restore previous FERC rule allowing CWIP charges on a case-by-case basis.

Prior to the Chamber's Board of Directors adoption of a position opposing S. 1069 and S. 817, the issue was reviewed thoroughly by our committee process. All segments and aspects of our membership were represented, including energy producers, distributors, industrial users, and other small and large businesses.

The Chamber decided to oppose S. 817 and S. 1069 because they would seriously interfere with the ability of the investor-owned electric utility companies to provide adequate and reliable supplies of electricity--a necessity for all segments of the economy.

We not have a position as to whether Order 298, or some other precedure, is proper. Indeed, we do not involve ourselves in the technical details or merits of this complex ratemaking process.

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Adequate and Reliable Electricity--Fundamental to Economic Growth

Electricity is fundamental for economic growth. Over the past several years, it has become increasingly more difficult for some utilities to maintain their construction programs because of high interest rates, inflation, and lengthy permitting and construction periods. S. 817 and S. 1069 would curtail the ability of utilities to finance needed new construction, which would add to the difficulties.

Without ample electricity supplies at reasonable cost, all consumers suffer. Shortages force businesses to slow operations or cease them altogether. This results in lost jobs and higher prices for many consumer goods and services. Especially hard hit are the poor and those on fixed incomes who can least afford increases in their bills for power and are likely to suffer the most from brownouts, blackouts and curtailed work hours.

While projections differ, the fact remains that virtually all forecasters predict the demand for electricity will grow. What is often forgotten is that electricity consumption will not merely be the result of economic growth, but also a key contributor to that economic growth. Although the U.S. can be expected to have adequate generating capacity for the next five to seven years (based on an annual growth rate of three percent), the supply situation for the remainder of this century is not as certain.

By the year 2000, about 23 percent of the existing generating capacity will be more than 40 years old, normal retirement age or older. The Department of Energy predicts the U.S. may need as many as 300 to 400 new conventional-sized power plants to replace these and satisfy demand. Even if these predictions are wrong, so that overestimation and conservation result in a need for as few as half as many plants, the country will still need to build many new facilities.

If the utility industry is to meet its responsibilities, and if our nation is to continue to sustain the public health and lifestyle it enjoys today, steps must be taken now to sustain an even level of new plant construction. To do so, the utility industry must be allowed to finance its efforts from current earnings, the same as other industries.

Conclusion

The need for future power supplies across the country is well established. Whereas portions of society may disagree as to the amount that may be needed, or the mix of fuels, conservation and solar power that may be used, there is still agreement that more power must be provided. Further, there is agreement that powerplant construction takes a long time. Therefore, the country must be planning now for plants to be built over the next few decades. The country should be working to facilitate this new construction, with reasonable and prudent regard for environmental protection and rates.

The Chamber opposes S. 1069 and S. 817, which run counter to these needs. They would slow and interfere with construction and make it more difficult for investor owned utilities to finance, hence construct, new plants.

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